Construction IN THE SOUTH

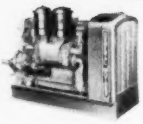
DECEMBER 1951

GM Diesel-powered crushing plant

GM Diesel powers air compressor for drilling

GM Diesel-powered Koehring shovel

Only Two Hours' Down Time in Two Years



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All these features add up to dependable, profit-making operation. It explains why GM Diesel engines are offered as standard or optional equipment in over 500 kinds of power machinery by 120 different manufacturers. Write for full details.

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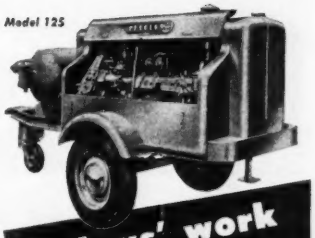

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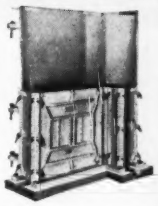

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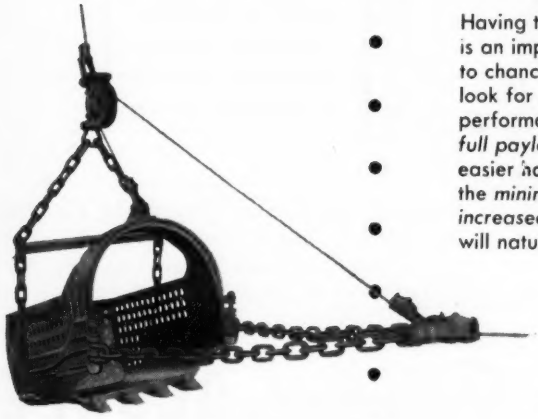

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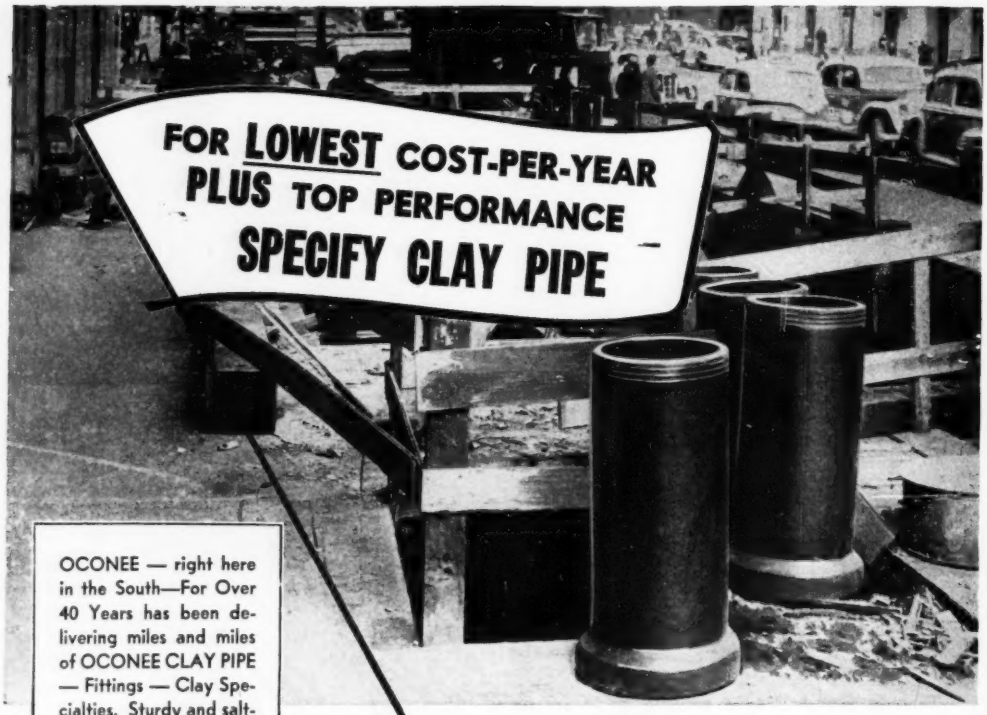

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$4,000,000 in Highway Bids Received by Texas

Low bids totaling more than four million dollars were received November 14 by the Texas State Highway Department. The opening covered approximately ninety-nine miles of farm-to-market roads and ninety-two miles of trunk highways, and included projects in the following counties:

Washington — U.S. 290, Project F-236 (7), .132 mile widening four bridges and one culvert; Thomas & Ratliff, Rogers, $49,791;

Smith—S.H. 155, Project F-646 (7), 4.988 miles grading, and structures; Thomas & Ratliff, Rogers, $126,345;

Shelby — U.S. 96, Project F-159 (6), 10.855 miles flexible base and two course surface treatment; Pioneer Trucking & Construction Co., Grapeland, $172,500;

Grayson—U.S. 75, Control C 47 2&3 25& 17, 13.954 miles grading, flexible base, concrete pavement widening and hot mix asphalt concrete pavement; H. B. Zachry Co., San Antonio, $731,318;

Fort Bend & Harris—U.S. 59, Control C 27 8&9 34&10, 6.678 miles flexible base and hot mix asphaltic concrete pavement; Gulf Bitulithic Co., Houston, $212,469;

Goliad—U.S. 59, Control C 88 2 10, .934 mile pavement widening; Thomas & Ratliff, Rogers, $46,243;

Denton—FM 51, Project C 312 2 1, 3.670 miles grading, structures, foundation course, and one course surface treatment; R. N. Adams, Kaufman, $70,059;

Wilbarger—FM 924, Project S 1216, 5.993 miles grading, structures, base and surfacing; Cooper & Woodruff, Amarillo, $55,581;

Lamar—FM 1184, Project S 1829 (1), 4.378 miles grading, structures, base and surfacing; R. B. Butler, Inc., Bryan, $63,736;

Mason—FM 1723, Project S 1692 (1), 3.983 miles grading, structures, base and surfacing; Killian Keller Co., San Antonio, $38,819;

Bexar — FM 1628, Project S 1699 (1), 1.802 miles grading, structures, base and surfacing; Thomas & Ratliff, Rogers, $19,698;

Ellis—FM 879, Control V 1159 2 1, 6.017 miles grading, structures, base and surfacing; Adams Brothers, Kaufman, $70,059;

Panola — FM 123, Control V 731 1 2, 10.084 miles grading, structures, base and surfacing; McMillin Burkett Construction, Texarkana, $174,483;

Randall—FM 1714, Project S 1560 (1), 7.094 miles grading, structures, base and surfacing; Cooper & Woodruff, Amarillo, $58,227;

Waller — FM 362, Project S 1088 (3), 6.235 miles grading, structures, base and surfacing; Brown & Root, Inc., Houston, $89,774;

Fisher—FM 611, Project S 1009 (2), 1.825 miles grading, structures, base and surfacing; Ernest Loyd, Fort Worth, $29,044;

Castro — FM 168, Project S 1261 (2), 10.587 miles grading, structures, base and surfacing; Kerr & Middleton, Lubbock, $79,935;

Trinity — FM 287, Project S 1825 (1), 3.834 miles grading, structures, base and surface; J. R. Canion, Austin, $51,600;

Washington—FM 1371, Control R 1405 1 1, 5.547 miles grading, structures, base and surfacing; M. E. Ruby & N. L. Larson, San Marcos and Austin, $46,243;

Lamar—FM 905, Control V 730 3 2, 4.833 miles grading, structures, base and surfacing; Dew Construction Co., Inc., Tyler, $52,561;

Leon — FM 1119, Control RV 1223 1 1, 5.602 miles grading and small structures; F. C. Herrling, Kurten, $25,548;

Collin—FM 543, Control C 816 4 7, .431 mile grading, structures, and base; R. W. McKinney, Nacogdoches, $44,369;

Winkler—FM 874, Control R 1189 1 2, 8.656 miles grading, structures, base and surface; J. R. Fanning, Lubbock, $64,698;

Navarro—SH 31, Control C 163 1 12 & C 163 2 9, 20.826 miles hot mix asphaltic concrete pavement; Public Construction & M. W. Jagoe Co., Inc., Denton, $137,842;

Collin—U.S. 75, Control C 47 4&5 9&15, 13.999 miles grading, widen bridges, foundation course shoulders, widen pavement, hot mix asphaltic concrete pavement, and flexible base; Uvalde Construction Co., Dallas, $620,135;

Roberts — SH 70, Project S 1212 (5), 12 miles flexible base and two course surface treatment; Cooper & Woodruff, Amarillo, $142,139;

Llano—RM 93, Project S 1691 (1), 3.577 miles grading, structures, select material and foundation course; Killian Keller Construction Co., San Antonio, $94,787;

Liberty—105 T, Project C 813 1 5, .052 mile, bridge over the Nevilles Bayou, Campbell & Kay, Tyler, $40,836;

Hidalgo—FM 1428 and 1426, Control R 865 5 1 and R 1429 1 1, 10.087 miles grading, structures, base and surfacing; E. B. Darby & Co., Pharr, $89,671;

Dallas—SH 183, Control C 94 3 14, C 353 5 27, C 581 1 10, and C 581 1 11, hot mix asphaltic concrete pavement; Uvalde Construction, Dallas, $182,135;

McLennan— M 988, M 9 N 9 and M 908, district office building, and laboratory; Hicks Construction Co., $245,000.

Nine Oklahoma Highways to Cost $1,454,007

Oklahoma last month received low bids totaling $1,454,007 for nine highway projects in six counties. Listed by counties, the projects follow:

Cherokee—S-181 (3) SH Part 1, grading, 6.511 miles grading, drainage and seven bridges, .047 mile on SH 82, beginning at Talequah and extending north and west, Quapaw Co., Picher, Okla., $181,226;

Cherokee—S-181 (3) SH Part 2, grading, 3.234 miles grading, drainage and one bridge, .004 of a mile on SH82 beginning 6.558 miles north of Tahlequah and extending northwest through Giden, Quapaw Co., Picher, Okla., $92,476;

Pottawatomie—F-211 (7), 4.426 miles asphalt concrete widening and resurfacing on U.S. 270 from Dale to McCloud, Metropolitan Paving Co., Oklahoma City, Okla., $257,642;

Grady—F-424 (4), three bridges .182 mile on SH 19 at Washita River, southeast of Bradley, Duard Pyle, Oklahoma City, Okla., $410,590;

Tulsa—U-591 (4), grading, 2.392 miles grading, drainage on U.S. 66 By-pass in Tulsa on 51st street, beginning at U.S. 66 and extending east to approach at Arkansas River bridges, Tex Baughman, Oklahoma City, Okla., $246,973;

Tulsa—UI-591 (4), .378 mile grading, drainage, Portland cement pavement on U.S. 66, beginning 1,736.3 feet southwesterly from 51st street and extending northwesterly in Tulsa, Standard Paving Co., Tulsa, Okla., $131,917;

Washita—S-692 (2), SH, 4.977 miles grading, drainage on SH 55, beginning at Retrop and extending east, W. D. Fulton Construction Co., Oklahoma City, Okla., $38,510;

Hughes—SAP-884 (2) Part 1, grading, 5.904 miles grading, drainage east of Dustin and extending west on SH 9, Gaines Brothers, Miami, Okla., $71,694;

Hughes—SAP-884 (2), Part 2, grading, 2.218 miles grading, drainage on SH 9 beginning west of Hughes-McIntosh County line and extending west, Gaines Brothers, Miami, Okla., $22,979.

"Greetings" to Welcome Oklahoma Tourists

Oklahoma's 1952 greeting card to tourists will be found in concrete salutations, six inches thick, at two score points where roads enter adjoining states.

The job is being engineered by the Oklahoma state highway department and the Oklahoma Planning and Resources Board. They also plan to establish information booths at the same points.

The freindly greetings will be seven and a half feet wide at the top and three feet nine inches long. Two and a half inch steel pipes will be molded into the cast to anchor the signs to a concrete base five feet six inches in width.

Seven inch lettering will stand out a quarter of an inch in relief.

Oklahoma is going into the tourist catching business in a big way with the activity being a "must" on Gov. Johnston Murray's business expansion program.

Zwick Named Assistant

William C. Zwick, Oklahoma City registered professional engineer, has been named assistant state bridge engineer of the Oklahoma state highway department by Director C. A. Stoldt. Mr. Zwick, who has spent 16 years with the department, succeeds D. I. McCullough, recently named state bridge engineer.

$15,150,000 San Angelo Dam Ready to Harness Floods

Above—Intake structure for the $15,150,000 San Angelo Project.

CEREMONIES were recently held dedicating the $15,150,000 San Angelo Dam and reservoir, an important West Texas flood control and water conservation project on the North Concho River, a Colorado River tributary. Construction started in 1947.

The seven-mile-long dam is located on the outskirts of San Angelo, Tex., which 15 years ago suffered a devastating flood. On the anniversary of this disaster, the people of San Angelo dedicated the flood control structure, which is now ready to harness floods generated upstream from the dam site. Deliberate impounding of water will be held in abeyance, however, until the early part of 1952, when real estate acquisitions are expected to be completed.

Among the major contractors who were engaged in the construction of the project were the following:

Fuller Construction Co., Shreveport, La., which held a contract for construction of the initial portion of the earth embankment, and Hughes Construction Co., Weslaco, Tex., for construction of another section of the earth dam; Nolan Brothers, Minneapolis, Minn., for the concrete outlet works, consisting of two 18-foot diameter discharge conduits and the gate-controlled intake structure; Winston Brothers & Taylor-Wheless, Minneapolis, Minn., contractors for the emergency spillway, service bridge and completion of the earth embankment. Clearing contractors were Deer Landscaping Co., Neodesha, Kans., and Harold Crider & Early Brothers, of Marble Falls, Texas.

Construction of the San Angelo project necessitated relocation of the Gulf, Colorado & Santa Fe Railroad and Texas State Highway No. 87. All have been accomplished.

The 37,550-foot-long earthen embankment contains approximately 11,500,000 cubic yards of earth fill, placed in six-inch layers and compacted by sheepsfoot rollers. The upstream slope of the dam is protected from wave action and erosion by stone riprap. A roadway has been constructed across the top of the embankment to permit access to the outlet works and intake structure.

Under a contract which has been executed between the Upper Colorado River Authority and the Corps of Engineers, the 80,400 acre-feet of conservation storage is being made available to that organization for the impoundment of water for municipal, agricultural and industrial uses. In return for this storage, about three-quarters of a million dollars are being contributed by the Upper Colorado River Authority towards the San Angelo project.

The San Angelo project is being completed under the immediate supervision of Col. Delbert B. Freeman, district engineer, Fort Worth District, Corps of Engineers. The project was authorized under the Flood Control Act of August 18, 1941.

Above—Left to right, C. A. Stoldt, Oklahoma State Highway Director; J. A. Elliott, regional engineer for the Federal Bureau of Public Roads; former governor of Oklahoma, Roy J. Turner, and L. M. Tittle, chairman of the Oklahoma State Highway Commission.

McCullough Made Engineer of Oklahoma Bridges

A former star athlete, D. I. McCullough, has been appointed state bridge engineer of the Oklahoma state highway department by Director C. A. Stoldt to succeed his former chief, Homer X. White, who died recently following a heart stroke.

Assistant state engineer since 1930, Mr. McCullough has been with the department 28 years. Mr. White, who became head of the division in 1930, had been with the department 29 years.

Mr. White graduated in civil engineering in 1913 from Iowa State College and for seven years was employed in various capacities by the American Bridge Co. of Ambridge, Pa.

Mr. McCullough is a civil engineering graduate of Oklahoma A.&M. College and was an outstanding track athlete during his high school days. He was a four-letterman on the A.&M. team of which he was captain in 1922.

Upkeep Engineer Named by Director Stoldt

Director C. A. Stoldt has named William W. Vaughan assistant maintenance engineer of the Oklahoma state highway department to succeed Ferd W. Arnold, called to training at the naval air auxiliary station at Oceana, Va.

Mr. Vaughan is a 21-year employee of the department.

Mr. Arnold was a company commander with the Seabees in the Admiralty Islands during World War II. He holds the rank of lieutenant commander in the naval reserve.

Winter Comes Early to Oklahoma System

Oklahoma highways are being treated to snow and ice earlier this year than in the past 30 years. Two storms swept the greater part of the state during the first and second weeks of November without much damage to roads.

Hundreds of state highway department employes spent several rough nights sanding hills, curves and bridges.

One worker, 62-year-old Edgar S. Powell, died of a heart attack while sanding a bridge in Oklahoma county.

Yukon Road Opened With Barbecue

Top brass in Oklahoma highway circles munched barbecued beef at the celebration of the official opening of six miles of 4-lane paving leading west out of Yukon on U.S. Highway 66.

Among those present were C. A. Stoldt, Oklahoma state highway director; J. A. Elliott, Fort Worth, Tex., regional engineer for the U. S. Bureau of Public Roads; former Oklahoma governor Roy J. Turner, E. E. Stubblefield, bureau's Oklahoma engineer, and Louis M. Tittle, Oklahoma state highway commission chairman.

The $1,107,000 job was projected by Governor Turner and was built by Amis Construction Co., Oklahoma City, bridges; Noland Smith Construction Co., El Reno, grading and drainage, and Dahlgren & Brooks, Oklahoma City, paving.

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EARTHMOVING EQUIPMENT

Twenty-four Missouri Projects Bid at $1,460,490

Missouri's State Highway Commission early last month received low bids totaling $1,460,490 for twenty-four projects in seventeen counties. The projects included the following:

St. Louis, Route 66, UI-892(2)a, constructing outfall sewer, Victory Construction Co. & Paul Krummel, St. Louis, Mo., $667,537;

Buchanan, Route 36, Sec. 3-A, graded earth, culverts, Portland cement concrete pavement 22 feet wide, .034 mile, Clark Construction Co., St. Joseph, Mo., $70,255;

DeKalb, Route 36, Sec. 7-A, graded earth, culverts, Portland cement concrete pavement 22 feet wide, .515 mile, C. H. Atkinson Paving Co., Chillicothe, Mo., $89,867;

DeKalb, Route 36, Sec. 9-B, graded earth, culverts, storm sewer, .233 mile, C. H. Atkinson Paving Co., Chillicothe, Mo., $21,473;

Moniteau, Route SN, S-1156(1)-A, graded earth, culverts, gravel or crushed stone surfacing, 3.883 miles, Davis Construction Co., Inc., Boonville, Mo., $24,559;

Moniteau, Route SN, S-1156(1)-B, graded earth, culverts, gravel or crushed stone surfacing, 1.853 miles, Davis Construction Co., Inc., Boonville, Mo., $16,410;

Cole, Route SN, S-1156(1)-C, graded earth, culverts, gravel or crushed stone surfacing, .490 mile, Davis Construction Co., Inc., Boonville, Mo., $3,550;

Sullivan, Route SEE, S-926(1)a-A, graded earth and culverts, 2.764 miles, Carl Partin, Milan, Mo., $14,077;

Sullivan, Route SEE, S-926(1)a-B, graded earth and culverts, 2.509 miles, Carl Partin, Milan, Mo., $8,218;

Henry, Route SW, S-315(1)-A, graded earth, culverts, gravel or crushed stone surfacing, 3.052 miles, Jos. L. Pohl, Nevada, Mo., $29,001;

Henry, Route SW, S-315(1)-B, graded earth, culverts, gravel or crushed stone surfacing, 3.023 miles, Jos. L. Pohl, Nevada, Mo., $26,835;

Greene, Route SPP, S-679(2)-A, graded earth, culverts, chat, gravel or crushed stone surfacing, 2.508 miles, Howard Construction Co., Sedalia, Mo., $15,372;

Greene, Route SPP, S-679(2)-B, graded earth, culverts, chat, gravel or crushed stone surfacing, 2.732 miles, Howard Construction Co., Sedalia, Mo., $20,772;

Nodaway, Route SE, S-245(3), graded earth, culverts, gravel or crushed stone surfacing, 4.068 miles, Clark Construction Co., St. Joseph, Mo., $37,248;

Lincoln, Route SH, S-305(1), graded earth, culverts, gravel or crushed stone surfacing, 3.805 miles, Jos. L. Pohl, Nevada, Mo., $33,728;

Shelby, Route SK, S-1024(2), graded earth, culverts, gravel or crushed stone surfacing, 4.391 miles, Lewis W. Arnold, Mexico, Mo., $28,497;

Nodaway, Route SM, S-477(3), graded earth, culverts, bridge, gravel or crushed stone surfacing, 2.563 miles, C. H. Atkinson Paving Co., Chillicothe, Mo., $39,951;

Lincoln, Route SN, S-1215(1), graded earth, culverts, gravel or crushed stone surfacing, 2.410 miles, Jos. L. Pohl, Nevada, Mo., $19,054;

Pettis, Route SAA, S-1199(1), graded earth, culverts, bridge, gravel or crushed stone surfacing, 3.267 miles, Howard Construction Co., Sedalia, Mo., $59,338;

Howard, Route SZ, S-1065(1)a, graded earth, culverts, gravel or crushed stone surfacing, 3.730 miles, Steinhoff-Kirkwood-Joiner, Advance, Mo., $42,920;

Maries, Route SO, S-1086(3), graded earth, culverts, bridge, gravel or crushed stone surfacing, 1.276 miles, Howard Construction Co., Sedalia, Mo., $70,145;

Lawrence, Route SM, S-1153(1), graded earth, culverts, bridge, chat, gravel or crushed stone surfacing, .250 mile, Atkinson-Windle Co., Chillicothe, Mo., $74,321;

Wright, Route SF, S-906(3), graded earth, culverts, bridge, gravel or crushed stone surfacing, 3.305 miles, Allcorn & Koger Construction Co., Van Buren, Mo., $40,967;

Howard, Route 5, Sec. 38, grading, constructing, Portland cement concrete pavement, 25 feet wide, .048 mile, Union Construction Co., Kansas City, Kans., $6,384.

Bull Shoals Dam Accepted by Army Engineers

Bull Shoals Dam, 15 miles northwest of Mountain Home, Ark., was accepted last month by Col. Hans W. Holmer, Little Rock District Engineer. The ceremonies were brief and were participated in by Col. Holmer and M. H. Slocum, general superintendent for Ozark Dam Constructors, builders of the huge structure.

Construction was started in June 1947. Storage of water to form the Bull Shoals reservoir commenced in July. The water last month was at elevation 592.41 mean sea level, or about 142 feet deep at the dam. Due to heavy snows of two weeks ago in the White River drainage area above the dam, the water has been rising so rapidly that it interfered with clearing operations in the reservoir area. Consequently, gates in the dam were opened to reduce the speed of storage to a rate of about a foot a day.

Work on the powerhouse is continuing steadily, completion of this part of the structure being expected early in the spring of next year. The first of four 40,000-kilowatt electric turbines and generators is expected to be ready for operation in the summer. The others will follow at intervals of two or three months.

The power pool, at which level the water in Bull Shoals Reservoir will remain most of the time, will form a lake of approximately 45,400 acres which will extend up White River to the vicinity of Forsyth, Mo. If the water ever reaches the top of the flood control pool, a lake of approximately 71,200 acres will be formed.

Bull Shoals dam contains 2,100,000 cubic yards of concrete and is considered the fifth largest concrete dam in the nation, supplanting Norfork Dam on the North Fork River southeast of Mountain Home. Bull Shoals dam is 2,256 feet long, about seven city blocks, towers 283 feet above the stream bed, is 230 feet in width at the base, and has a 26-foot roadway across the top of its crest.

Ozark Dam Constructors, contractor for the dam, is a joint venture by nine firms and individuals. These are: Brown & Root, Inc., Houston, Tex.; Wunderlich Contracting Co., Jefferson City, Mo.; Peter Kiewit Sons Co., Omaha, Nebr.; Winston Brothers Co., Minneapolis, Minn.; David G. Gordon, Denver, Colo.; Condon-Cunningham Co., Omaha, Nebr.; Morrison-Knudsen Co., Inc., Boise, Idaho; J. C. Maguire & Co., Los Angeles, Calif., and Chas. H. Tompkins Co., Washington, D. C.

Brandon Plant Opened by Marquette Cement

Marquette Cement Manufacturing Company's new plant at Brandon, Miss., is now in production, producing for the southern market the first cement ever made in Mississippi. The giant 450-foot kiln, principal piece of machinery at the plant and one of the largest pieces of moving machinery in the world, is now turning out cement clinker at its regular production rate of one million barrels annually. Very soon now shipments of all types of Portland and masonry cement will begin to consumers in Mississippi, Louisiana and southeastern Arkansas.

Construction of the new cement plant was undertaken one year ago this month on a pine-covered tract 12 miles east of Jackson, Miss. Originally scheduled for completion this fall, progress was hampered by the severe winter weather of 1950-51; by governmental restrictions and allocations, by occasional labor jurisdictional disputes, and by the necessity for quick alteration of certain design details to alleviate rising costs and procurement problems. Production at this early date is therefore considered by Marquette officials to be a major triumph.

In addition to greatly increasing the availability of cement for the construction of factories, homes, airports, highways and defense installations in the South, the new Marquette plant will increase the purchasing power of the Brandon-Jackson area with an annual payroll of approximately a half-million dollars going to local employes of the company. Local suppliers will also benefit through company purchases of a huge volume of electric power, natural gas and countless other commodities and services.

The million-barrel plant now in production at Brandon has been designed by Marquette engineers "with an eye to the future." It was stated that in the event of materially increased demand for cement, the plant could be considerably enlarged at any time to operate efficiently at a higher rate of production.

Engineer Funds Curtailed for Studies, Surveys

Funds for examination and survey for Corps of Engineers civil works projects for the fiscal year 1952 have been severely curtailed, says Col. J. D. Lang, Galveston District Engineer.

No funds for conducting examinations and surveys for civil works in the Galveston District were contained in the recent appropriation act passed by Congress.

STANDARD ENGINEER'S REPORT

DATA

PRODUCT Chevron Starting Fluid

UNITS Diesel + gasoline engines

APPLICATION Into intake manifold

CONDITIONS Freezing weather

SERVICE All types

Engines start in 10 seconds at 50° below zero!

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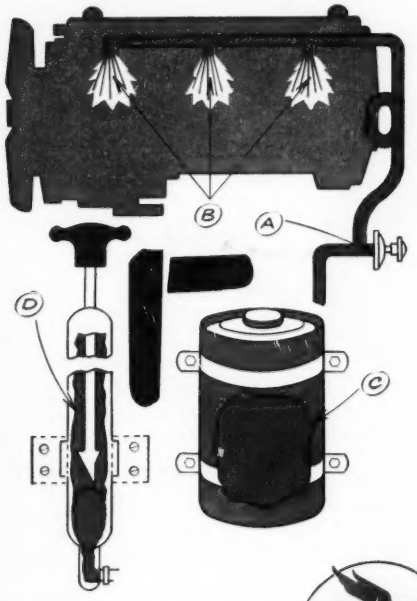
Approved by leading engine manufacturers, it provides easy starting in the coldest weather where engines are operated.



PRIMER EQUIPMENT for the use of Chevron Starting Fluid in any diesel or gasoline engine, shown in the drawing above, may be purchased from your fluid supplier. It comes ready to install.

CHEVRON STARTING FLUID

TRADEMARK REG. U.S. PAT. OFF.

Chevron Starting Fluid contains a lubricant that helps prevent starting wear on upper cylinder walls and makes pistons slide easier. Other special additives prevent formation of ice crystals in primer equipment. It comes in convenient, easily handled capsules of two sizes—7CC's and 17CC's, packed 12 and 24 in metal containers. It is also available for bulk use in 3-pint cans.

ATOMIZED BY PRIMER EQUIPMENT, as indicated at left, Chevron Starting Fluid is injected into intake manifolds while engine is cranked...process is continued until engine starts and warms sufficiently to run on regular fuel.

A. Pump of primer system mounted on dash convenient to engine operator...forces fluid into manifold through tubing and special nozzles.

B. Nozzles adapted to manifold atomize fluid.

C. Storage tank for bulk fluid supply connected to system when capsules not used.

D. Special tool for puncturing capsules of fluid replaces storage tank when fluid obtained in this form...installed near pump convenient to operator so he may operate both at once.

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that shows where Chevron Starting Fluid is applied in the different intake manifolds of various types of engines. The booklet also tells results operators have obtained with Chevron Starting Fluid under extreme temperature conditions.

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Thirteen Louisiana Jobs Amount to $911,983

Thirteen projects in nine parishes were covered by bids opened at the middle of last month by the Louisiana State Highway Department. Totaling $911,983, the projects included:

St. Tammany Parish—Washed gravel, Wildheim-South Highway, Control Unit No. 852-16, Kivett & Reel, Inc., Sun, La., $1,379;

Pointe Coupee Parish—1.660 miles of grading and drainage structures, Morganza floodway approaches, State Route No. 30, Campbell Construction Co., Inc., Shreveport, La., $296,238;

Jefferson Parish—.690 mile of repairs to Caminada Bay Bridge, State Route No. 620, Keller Construction Co., New Orleans, La., $308,002;

Evangeline Parish—6.402 (net) miles of grading, drainage structures, gravel base course, or as alternate, soil cement base course and bituminous surface treatment (asphalt cement), State Project No. 380-01-04, Grand Prairie-Ville Platte Highway, State Route No. 119, E. A. Caldwell, Baton Rouge, La., $201,083;

Natchitoches Parish—3 miles of small drainage structures, and sand clay gravel surface course (grade B modified), State Project No. 361-01-05, Bermuda-Montgomery Ferry Highway, State Route No. 1173, E. A. Caldwell, Baton Rouge, La., $13,447;

Franklin Parish—19.86 miles of furnishing surface course sand clay gravel (grade B) spot-dumped, State Project No. 703-09-10, Part 1, Items S-1, S-4, S-5, S-7, S-8 & S-9, R. G. Cruse Lumber Co. and W. R. Slay Construction Co., Sicily Island, La., $24,537; Items S-2 & S-6, Wisner Gravel Co., Wisner, La., $7,330; Items S-3 & S-10, A. B. Chisum, Sicily Island, La., $8,504;

Franklin Parish—furnishing creosoted timber piles, stockpiled at bridge site in Ward 3, State Project No. 703-09-10, Part 2, American Creosote Works, Inc., New Orleans 18, La., $1,356;

Jackson Parish—furnishing washed gravel F.O.B. railroad cars, State Project No. 703-09-11, Part 2, Dunham-Stephens Gravel Co., Inc., Alexandria, La., $13,682;

Vernon Parish—Bridge material stockpiled at various sites, State Project No. 703-09-12, Items 4-8-2P or 4-8-2F & 6-1-8, M. D. Hickman, DeRidder, La., $3,450; Item S-1, T. D. Johnson, Chopin, La., $3,269;

LaSalle Parish—Furnishing base course gravel (grade A) spot-dumped on Olla-Rosefield Highway, State Project No. 125-03-10, Paul A. Lambert, Simmesport, La., $5,925;

Evangeline Parish—furnishing base course gravel (grade A) spot-dumped, on Bayou Chicot-St. Landry Highway, State Project No. 204-03-04, State Route No. 23, W. R. Core, Glenmore, La., $16,305;

Evangeline Parish—furnishing base course gravel (grade A) spot-dumped on City Park Roads (Ville Platte), State Project No. 714-01-49, Wesley King, Turkey Creek, La., $7,031.

$749,010 Road Bids

Louisiana State Highway Department late last month opened bids for projects totaling $749,010. Largest single contract was 10.003 miles of grading, drainage structures, shell gravel or soil cement base course bituminous surface treatment and Portland cement concrete pavement. T. L. James & Co., Inc., of Ruston, bid $679,338 to do the work.

Floyd Bruce Commended

Floyd Bruce, construction superintendent in charge of core boring and foundation exploration for the Little Rock District of Corps of Engineers, has been commended for "superior accomplishment" by Col. Hans W. Holmer, District Engineer. Mr. Bruce is stationed at Bull Shoals Dam, Mountain Home, Ark.

The commendation was for design of a new type diamond drill bit and for design of a monorail for use in grouting galleries of dams.

An estimated saving of $3,600 a year will result from use of the new type drill bit within the Little Rock District alone. Of more than 100 of the new bits made and put to use, none is reported to have failed.

U.S. 66 Survey Authorized

A survey to determine requirements and cost estimated on converting U.S. Highway 66 into a 4-lane artery through Clinton has been ordered by the Oklahoma state highway commission.

Clinton city officials agree to pay for additional right-of-way and for the relocation of water and sewer lines.

Dallas Office Opened by Merritt-Chapman, Scott

Merritt-Chapman & Scott Corp. has established an office at Dallas, Tex., to serve as headquarters for the 91-year-old company's construction activities in the Southwest and Gulf Coast areas.

J. B. Allinson

Located at 704 Kirby Building, Dallas, the new Merritt-Chapman & Scott office is headed by J. B. Allinson, whose appointment as regional representative in the Southwest was announced by Ralph E. DeSimone, executive vice president and general manager of the company.

Mr. Allinson is a resident of Dallas and before joining Merritt-Chapman & Scott had been active in a wide field of construction operations for the past ten years, most of them in the Southwest.

Mr. DeSimone said that establishment of the Dallas office marked a move by Merritt-Chapman & Scott to further operations in an area which has proved an expanding source of work in the company's fields of industrial, building, heavy and marine construction.

Founded in 1860, Merritt-Chapman & Scott maintains headquarter offices at New York and currently has branch offices at Cleveland, Ohio; New London, Conn., and Boston, Mass. In addition to its diversified construction operations throughout the United States and abroad, the company is active in the fields of marine salvage and derrick heavy hoisting.

Major construction projects now underway by Merritt-Chapman & Scott in the West and Gulf Coast area include a dam more than two miles long on the American River at Folsom, Calif., a $29,444,000 project M-C&S is building for the U. S. Army Corps of Engineers in association with another contractor. In Mississippi, the company is constructing a 10,198-foot-long, four-lane bridge across Bay St. Louis, near its mouth on the Gulf of Mexico, a $6,061,434 project for the State Highway Commission.

Other work currently underway by Merritt-Chapman & Scott across the country includes chemical plants, paper mills, fuel storage facilities, pipelines, bridges, tunnels, military training facilities, hospitals, piers and sewage treatment works. Major projects outside the United States include a paper mill in Israel, a four-berth ocean freight terminal at Auckland, New Zealand, a joint venture with two other construction companies, and a water supply system at Havana, Cuba, under construction in association with another contractor.

Mr. Allinson, who will now represent Merritt-Chapman & Scott from its Dallas office, lives at 6614 Bandera Avenue, Dallas. Before joining M-C&S, he was until recently with Wyatt C. Hedrick, Inc., architects and engineers with offices at Dallas, Fort Worth and Houston, Tex. Previously, he served four years as Houston district manager for the Refinery Maintenance Co. of Los Angeles, Calif., a company engaged in industrial and engineering construction work.

A native of Oakland, Calif., and now 35 years old, Mr. Allinson attended the University of Texas, majoring in chemical engineering and later served as an assistant planning manager on the construction and operation of the atomic bomb project at Oak Ridge, Tenn. He subsequently served as a project and research engineer with Hydrocarbon Research, Inc., of New York, industrial and process engineers, and later was executive vice president of J. J. Allinson & Son, a Houston construction company which suspended operations following the death of his father, J. J. Allinson, in 1946.

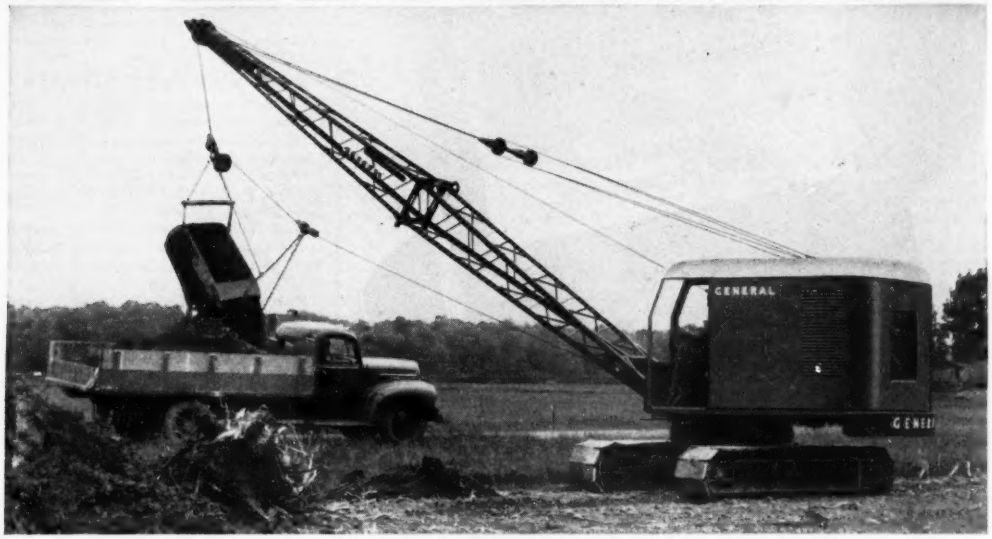
Marvel Named Engineer

Oklahoma county commissioners have appointed Artie Marvel county engineer to succeed C. W. McFerron, who resigned after holding the job 15 years. Mr. Marvel formerly was city engineer of Idabel and Seminole, assistant Oklahoma City, city engineer and an employe of the Oklahoma State highway department.

Gravel Projects Bid

Three small gravel projects were bid early in November. They were Project No. 2440A, Paul A. Lambert, Simmesport, $6,-011; Project 337-02-04, Henry Tyson, Oak Grove, and Howard C. White, Lake Providence, tie bids of $9,146, and Project 703-09-08, Anderson Gravel Co., Amite, $1,-590, item S-1, and Rogers Brothers Sand and Gravel Co., Tickfaw, La., $3,190, item S-2.

GENERAL



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KOPPERS **PRESSURE-TREATED WOOD**

Wood Posts Substituted for Steel in Oklahoma

Steel posts for road signs and raised letter steel signs are out as far as the Oklahoma state highway department is concerned.

Director C. A. Stoldt says both have been discarded as an economy move, now that the re-armament program has gobbled up most of the steel and has made almost priceless what is available.

Wooden posts are being substituted. Signs are being made of flatmetal because they can be repainted and used anywhere while the embossed type can't be changed.

Road Bids Total $170,420

Low bids received November 21 by the Louisiana Department of Highways totaled $170,420. Included were projects in the following parishes:

Plaquemines Parish—Clam shell spot-dumped, Project 703-08-92, A. G. Thomas, New Orleans, $10,540;

West Baton Rouge — Washed gravel spot-dumped, Project 703-09-17, Amite Sand & Gravel Co., Inc., Baton Rouge, $10,936;

Morehouse — Washed gravel spot-dumped, Project 703-09-18, Howard C. White, Lake Providence, $12,975;

East Carroll — Washed gravel spot-dumped, Project 703-09-20, Howard C. White, Lake Providence, $11,265;

Calcasieu — Base course shell spot-dumped on Vinton-East Highway, Project 192-01-02, W. T. Burton, Sulphur, $61,884;

Lafayette—Shell base course material spot-dumped on the roads in Duson, Project 714-01-43, Phil H. Hoag, Jennings, $19,800;

Avoyelles — Base course gravel spot-dumped on the Haasville Bunkil Highway, Project 805-18-04, Alexandria Gravel Co., Inc., Box 2030, Alexandria, $13,495;

Evangeline—Base course gravel spot-dumped on Mamou Chataignier Highway, Project 820-08-04, Wesley King, Turkey Creek, $11,115.

Houston Man Appointed by Link-Belt Company

Link-Belt Co. announces appointment of William J. Brinkworth as representative, distributor sales, Southwestern Division, with headquarters at the company's plant in Houston, Tex.

Mr. Brinkworth has been field manager, oil field distributor sales, and continues in this capacity but will now also supervise sales through the company's many industrial distributors in the Southwestern Division.

Mr. Brinkworth entered Link-Belt employ at the Ewart plant, Indianapolis, in 1929, where he spent the first five years in the service of the malleable foundry, successively gaining experience in the shop, then in supervision, and later on production.

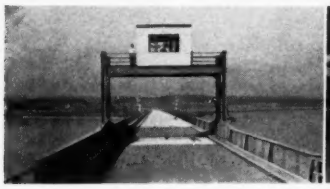
This experience was followed by work in the estimating department and eight years' experience in the sale of job malleable iron and Promal castings; then pricing and plant contacts with distributors, followed by his transfer to Houston in 1946.

Maryland Dedicates $2,262,000 Toll Bridge

Laurer

Above—Left—Dedication of the new $2,262,000 toll bridge stretching 3,343 feet across the Patuxent River between Calvert County on the east and Charles County to the west. Right—The four-car ferry operated for twenty-eight years by Capt. Charles N. Henderson makes its last trip loaded with notables.

Below—Left—The 152-foot draw span with its overhead control house. Fifteen-horsepower electric motors will swing its 225-ton weight open and closed. Middle—The "quadruplicate" ribbon cutting ceremony participated in by Governor Theodore R. McKeldin, former-Governor William Preston Lane, and State Senators L. L. Goldstein and J. B. Monroe, and Mrs. J. E. Rose, wife of the contractors' superintendent. Right—Angle elevation view of new bridge showing the 16-inch fluted pile bents with their concrete struts and caps, the steel I-beam stringers, the seven-inch concrete deck and the steel railing with H-beam posts and channel rails.



Maryland early this month formally opened the $2,262,000 toll bridge across the 3,343-foot-wide Patuxent River, connecting for the first time the shores of Calvert and Charles counties, as bands played, ribbons were snipped "in quadruplicate" and the ferry the structure replaces made its last trip after twenty-eight years of operation.

Several thousand countians joined with prominent figures in local, state and national affairs to witness the two-hour ceremony. Participating were Gov. Theodore R. McKeldin, William Preston Lane, his predecessor who signed the bill authorizing the project, and Senators Louis L. Goldstein and James B. Monroe, representing the two counties in the Maryland Legislature.

In the throng gathered on the Calvert County plaza where toll collection facilities are located were State Roads Commission Chairman Russell H. McCain, acting as master of ceremonies; Avery W. Hall, commission member; W. F. Childs, Jr., chief engineer; Walter C. Hopkins, deputy chief engineer, and Albert L. Grubb, bridge engineer under whose direct supervision the project was designed and built.

The bridge stretches 3,343 feet from abutment to abutment, these being approximately at the water line. Its 24-foot-wide reinforced concrete roadway is seven inches thick. This, together with the two 18-inch safety curbs, is carried on I-beams stretching across the concrete caps of the steel and concrete pile bents that extend as deep as 100 feet below tide.

Underclearance of the draw span is 15 feet. Open, it allows two 50-foot channels. Of through girder design, this 152-foot-two-inch movable span operates on a 28-foot-diameter pivot pier. The span will be power-operated from a control house built on a steel frame above the bridge deck. The span's Irving open-steel floor weighs 36 tons.

Design of the 225-ton draw span is so finely balanced that it can be opened and closed by one man pushing against a capstan bar inserted in the bed of the bridge. This is possible by arrangement of the gear assembly and will be used only during emergencies and up to the time the war-delayed 15-horsepower motors are received. Total weight of the operating machinery is 18 tons.

Numerically, the bridge superstructure embraces 56 of the beam spans and the draw. Forty-two of the spans are 50 feet center to center; the balance are 78 feet long. Five rows of I-beams on 5-foot-7-inch centers are 33 inches deep on the cast-in-place bents; 36 inches deep on the precast pile bents.

Water under the bridge varies from a few feet to more than 38 feet. Toward the stream's middle it drops to this depth from nine feet. For this reason the bents are of both cast-in-place and precast design. The cast-in-place piles with their Union Metal fluted JN casings were used in the shallower waters. Their length ranges from 50 to 90 feet. The two-foot-square ready-made piles are in the deeper part of the river. They go down as far as 95 feet below tide.

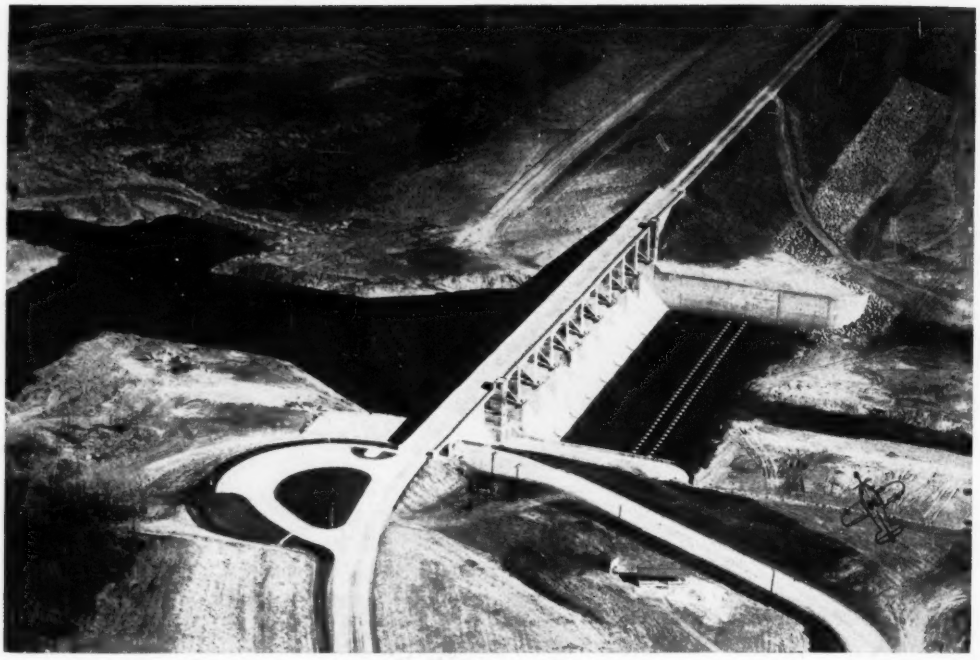
Every eighth bent is a stabilizer, containing 12 piles, six battered in each direction. The other bents consist of eight piles. Only the end piles of these are battered outwardly. Wobble is eliminated by use of a concrete strut averaging 38 feet long and cast around the piles of each bent. These struts extend three feet below and one foot above the water, making them four feet deep.

The pivot pier on which the draw span rotates is built up on 42 steel H-piles which extend as much as 100 feet below the water surface. The reinforced concrete pier itself is 46 feet in depth.

Abutments, pivot pier and the roadway deck required 4,000 cubic yards of concrete. An extra strength concrete costing about $120 a cubic yard was used in the struts. This totaled 1,000 yards.

Diamond Construction Co. of Washington, D. C., started construction of the bridge May 8, 1950, following a previously submitted low bid of $1,742,743. J. E. Rose, of that company, was superintendent, and

(Continued on page 57)



Above—Hulah dam constructed on the Caney River in the Tulsa District of the Corps of Engineers by Mittry Brothers Construction Co., of Los Angeles, Calif. The dam is 5,200 feet long and has a maximum height of 97 feet. This is a downstream view of the completed spillway structure. Access road C and the overlook area are in the foreground.

South's Construction Contracts Valued at $5,293,302,000

SOUTHERN construction totaled $221,116,000 in November.

The figure pushed the value of contracts in the sixteen-state area to $5,293,302,000 for the elapsed period of this year, which already has set an all-time record.

According to reports in the *Daily Construction Bulletin* of the MANUFACTURERS RECORD, construction in the South this year is valued at a figure not only higher than that for any comparable period but in excess of all previous twelve-month totals.

Nineteen Per Cent Greater

The current eleven-month aggregate is almost nineteen per cent larger than that for the entire year of 1950. Last year represented the previous peak for southern construction.

The 1950 figure was $4,369,152,000. Other postwar twelve-month totals were the $3,205,021,000 for 1949; the $2,830,038,000 for 1948; $1,984,654,000 for 1947 and $1,797,532,000 for 1946.

Nineteen fifty-one's banner $5,293,302,000 embraces $2,271,793,000 for industrial construction; $954,957,000 for private building; $748,501,000 for public building; $750,741,000 for heavy engineering type construction, and $567,310,000 for highways and bridges.

The $2,271,793,000 industrial contract total is almost three times the size of its eleven-month counterpart of last year. Two huge atomic energy plants, together with multi-million dollar expansions in the South's metals and chemical industries contributed substantially to the current figure.

Private building, with its $954,957,000 total thirteen per cent lower than the level prevailing for such work at this time last year, is showing the effects of federal restrictions.

Residential building is the influencing factor in the private field. In the first eleven months of 1951 the total value for such work in the South is set at $765,168,000. This is at practically the same level as in the first eleven months of 1950.

Other elements in the private building total are the $76,547,000 for assembly buildings; the $57,063,000 for office buildings and the $56,179,000 for commercial buildings. Declines in these three categories range from the thirty per cent in value of assembly building to the forty-three per cent in commercial projects.

Heavy Construction Up

Heavy engineering type construction so far this year totals $750,741,000. All financed by government agencies, this type of construction is valued sixty-four per cent greater this year than in the eleven-month period of 1950.

Dams, drainage, earth and airports, the largest combination in the heavy construction field, in the eleven months together are valued at $557,672,000. This is almost two and one-half times the size of the total for the same period of last year.

A gain of almost eight per cent was registered in the current value of sewer and water work. The total for the eleven months in this category was $137,688,000, as compared with the $127,764,000 in the similar months of 1950. Government electric projects have almost halved. The total is $55,381,000.

Stability in Highway Field

Highway and bridge construction is another field that this year has shown stability. The total for the current eleven months is $567,310,000. Last year at this time, the figure stood at $557,564,000.

Public building is down. The eleven-month total is $748,501,000. In the same fraction of 1950, the value of such work was $794,634,000. This represents a difference of practically six per cent. Components in the current total are $406,600,000 for government buildings and $341,901,000 for schools. Difficulties in obtaining allotments of steel have helped reduce the school aggregate.

$221,116,000 in November

November's $221,116,000 for construction below the Mason and Dixon line is made up of $110,710,000 for privately financed work and $110,710,000 for publicly financed projects.

The private work includes $64,211,000 for general building and $46,499,000 for industrial construction. In the other category are $32,869,000 for public building; $42,187,000 for engineering projects and $35,350,000 for highways and bridges.

Private building, as usually prevails, is substantially residential construction. The $51,841,000 for dwelling type building represents eighty per cent of the total and is twenty-five per cent under the figure for such work in the preceding month.

The balance of the private building total includes $6,744,000 for assembly buildings, $3,128,000 for office buildings and $2,498,000 for commercial buildings. The largest decline—seventy-one per cent—was in commercial building. Drops in the other two were forty-six and fifty-eight per cent, respectively.

Industrial Work Second

Industrial construction ranked second in value in the November picture. The $46,499,000 figure was a drastic drop from the preceding month's total and momentum in the scramble to expand is reportedly slackening.

Sufficient structural steel for first quarter steel and aluminum expansion programs is understood to exist. Several of the largest projects in these fields are located in the South.

Just how confused the situation is is shown by a report that the State Department has assisted a Moslem Mosque to get steel in Washington, while other churches were denied such material.

Allocations of steel for school construction have revised to permit a number of such projects to proceed. Included were allowances for a twelve-wing addition in Baltimore County and for almost seventy-five per cent of the school projects in the Washington area.

Labor Unrest Reported

The labor situation is becoming increasingly unsettled. Bricklayers in the Nation's Capital are asking an increase in the hourly rate to $3.30 an hour. A jurisdictional row halted construction at Oak Ridge, Tenn. Plumbers at that atomic energy commission project were in conflict with carpenters.

The Bureau of Labor Statistics says that the union hourly wage scales of workers in the building trades has advanced seven-tenths of one per cent between July 2 and October 1. In the previously three-month period, wage scales rose two per cent.

Higher wage scales were reported for at least one craft in one-half of the 85 cities included in a survey. About one-seventh of 570,000 construction workers benefited from the increases.

Ceiling prices for the construction industry were established November 20. Prime and subcontractors, as well as

(Continued on page 52)

SOUTH'S CONSTRUCTION BY TYPES

	November, 1951		Contracts Awarded First Eleven Months 1951	Contracts Awarded First Eleven Months 1950
	Contracts Awarded	Contracts Awarded to be		
PRIVATE BUILDING				
Assembly (Churches, Theatres, Auditoriums, Fraternal)	$6,744,000	$7,575,000	$76,547,000	$110,565,000
Commercial (Stores, Restaurants, Filling Stations, Garages)	2,498,000	26,285,000	56,179,000	99,672,000
Residential (Apartments, Hotels, Dwellings)	51,841,000	66,569,000	765,168,000	774,471,000
Office	3,128,000	2,530,000	57,063,000	99,241,000
	$64,211,000	$102,959,000	$954,957,000	$1,083,949,000
INDUSTRIAL	$46,499,000	$429,334,000	$2,271,793,000	$839,584,000
PUBLIC BUILDING				
City, County, State, Federal and Hospitals	$20,233,000	$32,690,000	$406,600,000	$412,974,000
Schools	12,636,000	51,323,000	341,901,000	381,660,000
	$32,869,000	$84,013,000	$748,501,000	$794,634,000
ENGINEERING				
Dams, Drainage, Earthwork, Airports	$28,422,000	$370,941,000	$557,672,000	$223,213,000
Federal, County, Municipal Electric	1,713,000	30,687,000	55,381,000	104,912,000
Sewers and Waterworks	12,052,000	18,379,000	137,688,000	127,764,000
	$42,187,000	$420,007,000	$750,741,000	$455,889,000
ROADS, STREETS, BRIDGES	$35,350,000	$284,627,000	$567,310,000	$557,564,000
TOTAL	$221,116,000	$1,320,940,000	$5,293,302,000	$3,731,620,000

SOUTH'S CONSTRUCTION BY STATES

	November, 1951		Contracts Awarded First Eleven Months 1951	Contracts Awarded First Eleven Months 1950
	Contracts Awarded	Contracts to be Awarded		
Alabama	$13,343,000	$76,315,000	$282,355,000	$157,811,000
Arkansas	547,000	19,759,000	148,651,000	136,562,000
Dist. of Col.	314,000	4,830,000	34,538,000	40,569,000
Florida	19,225,000	59,778,000	489,277,000	362,773,000
Georgia	9,961,000	39,806,000	210,817,000	140,127,000
Kentucky	6,514,000	170,156,000	500,589,000	94,741,000
Louisiana	32,637,000	164,041,000	493,344,000	322,156,000
Maryland	14,691,000	53,045,000	376,494,000	301,906,000
Mississippi	3,686,000	24,897,000	151,667,000	120,049,000
Missouri	11,397,000	24,240,000	169,261,000	225,134,000
N. Carolina	28,844,000	61,149,000	338,873,000	336,975,000
Oklahoma	5,233,000	126,464,000	78,469,000	122,063,000
S. Carolina	9,790,000	11,089,000	491,233,000	109,624,000
Tennessee	6,088,000	65,649,000	210,267,000	206,553,000
Texas	46,052,000	274,061,000	1,063,188,000	808,456,000
Virginia	11,598,000	69,208,000	291,162,000	223,707,000
W. Virginia	1,196,000	76,453,000	53,126,000	22,414,000
TOTAL	$221,116,000	$1,320,940,000	$5,293,302,000	$3,731,620,000

Below—The new 100-bed addition to Wayne Memorial Hospital at Goldsboro, N. C., erected by T. A. Loving & Co., local contractors. The building cost approximately one million dollars and was designed by A. J. Maxwell.

Shovel-Crane Service Today and Every Day

By
A. E. York
Link-Belt Speeder Service Manager

The international situation and America's increasing defense efforts have created abnormal demands for construction equipment. Among those in the greatest demand are power cranes and shovels.

This unprecedented call for new power cranes and shovels has also accelerated the demands upon equipment already in use. As long as the present shortage of new equipment for normal civilian requirements exists, it becomes increasingly vital to keep existing equipment in the best operating condition. In times like these, delays and shutdowns become especially costly, and can usually be prevented by planned care and preventive maintenance.

The most important periods in the lifetime of cranes or shovels come when they are first placed in service, and the period immediately following when the customer is becoming accustomed to the machines. That's why it is essential that this piece of expensive equipment be started off properly by qualified servicemen. And the qualification of the servicemen is the responsibility of the dealer selling the equipment.

Proper instruction covering all adjustments, care and points of lubrication is important at the time of delivery. Since there will always be a labor turnover, it is essential that operating instructions be handed down from one operator to another in the event that the employee originally familiar with operating instructions leaves for another job.

Too often, a new shovel or crane is deadlined because of improper care and lubrication after the machine has left the factory. In many cases the problem of too much grease is almost as serious as too little lubrication. Since the danger connected with lubricating certain points is covered at the time of delivery, the customer should see that the information reaches the proper personnel.

Systematic care and maintenance can usually be developed by following carefully the manufacturer's operating and instruction manuals. This includes not only proper care and lubrication, but also keeping the machine clean, and making regular periodic inspections of the equipment—inspection which will reveal necessary normal adjustments, and which will assure the proper replacement of parts at the right time.

In the case of old equipment, certain steps should be taken to prolong the natural life of the machine. A few precautions can greatly extend the time between major overhaul jobs.

Lubricants, motor oils and greases should conform to manufacturer's recommendations, and should be products of reputable firms. Regular intervals of lubrication will eliminate the "guesswork" concerning the number of hours worked. Manufacturer's charts on seasonal changes in viscosity should be followed closely.

One important detail to remember is the periodic examination of lubrication tubes. Too often it has been discovered too late that a grease tube has failed or become clogged, and that grease was not reaching its intended goal. When that happens, some bearing will fail for lack of grease, which may also result in damage to a shaft or other important part. Replacing such shaft or part is often difficult and may result in a long, costly shutdown which could readily have been prevented by careful maintenance.

Clutches should be inspected closely to make sure they are maintained in good condition and adjustment. It should be determined whether or not the clutch is wearing properly. Linings should be examined closely and kept clean and free from grit and other foreign particles to eliminate scoring of drums. Center pins should be checked and tightened as needed. Drive chains should be kept in adjustment, and sprocket chains examined for undue wear. Bushings should be watched to avert shaft scoring. Engine filters must be changed at specified intervals to safeguard the power plant of the machine.

Good maintenance also entails the advance ordering of needed parts. Many parts, such as linings, cables, dipper and bucket teeth, and the like, are essentially wearing parts, and must be replaced periodically. It is essential that such parts be kept on hand for quick and convenient replacements. There are also other parts that, from experience, should be kept on hand to avoid costly shutdown and delays when such replacements are needed. By periodic and systematic inspections, it is also possible to anticipate other required replacements, and to have such parts on hand to install at the most convenient time. This is especially important now when replacement parts may not be available as quickly as in normal times, and when uninterrupted operation is more important than ever.

Machine cleanliness is paramount in good care and maintenance. Good "housekeeping" is conducive to good care and maintenance, and a well cared for machine is invariably also a clean machine. Pride in keeping the machine clean will instinctively encourage the operator to pay close attention to the proper care and mechanical condition of his machine, the importance of which cannot be stressed too strongly.

Periodic cable inspection is vital in all machines. A frayed cable should be promptly replaced, particularly if it is a load-carrying cable. Although it may be subjected to little actual running wear, the boom hoist cable—which is a load-carrying cable—also should be inspected frequently, since its failure could well result in serious damage or even personal injury. In these inspections, all cable connections should also be checked.

Overhaul jobs, which in normal times may have been undertaken without too much forethought, assume major proportions in times of emergency such as the nation is currently undergoing.

First step in such an overhaul job must be to determine the extent of the job. This calls for a detailed study and examination. Ordering additional material after the original order has been sent in can be avoided by making a careful first estimate. Definite shipping dates should be received. Better yet, no equipment should be disassembled until all material is on hand. Not too infrequently, a small item out of a large order can tie up a major repair job because of some supplier's inability to live up to a promise.

Local facilities for the job to be done must be explored to make certain the job can be completed in the least possible time. If local sources prove inadequate, improvisations can usually be made. Often it is wiser to move the equipment nearer to the proper facilities for repair and overhaul.

With the present material shortage at hand, consideration should be given to rebuilding parts, especially those which can be welded to return to original dimensions. Track sprockets, track rollers, track shoes—all can be rebuilt with hard surface rod to extend the life of these parts. Bores that have been worn oversize, can frequently be welded and rebored to standard size so as to make future replacements easier. Shafting—depending upon application—can sometimes be metal-sprayed satisfactorily. When possible, a plating process should be used to salvage shafts.

Complete overhaul jobs, if properly planned, can be accomplished with a minimum amount of down time even considering the present scarcity of material.

Proper equipment maintenance is doubly important in such a situation as the nation is facing today. With material shortages and replacements parts harder to obtain, it is vital that existing equipment be carefully serviced to provide longer life and a resultant better performance.

MERRY CHRISTMAS!
Cumberland Cements

Southern Construction Projects

(Typical and Important Reports Excerpted from Daily Construction Bulletin)

ALABAMA

American Telephone & Telegraph Co. and 11 Associated Companies of Bell System plan expenditures of nearly $60,000,000 for additional long-distance facilities. Plans provide for construction of about 7,000,000 miles of telephone circuits, thousands of miles of private line telegraph and teletypewriter exchange circuits and extensive additions to nationwide radio and television networks; projects include construction of coaxial cables between Chattanooga and Knoxville, Tenn., Memphis and Little Rock, Ark., and Orlando and Tampa, Fla.; four coaxials also will be added to cables now under construction to link Jackson, Miss., and New Orleans and Amarillo, Tex., and Oklahoma City.

ALABAMA—Bureau of Public Roads allocated $9,875,936 for highways.

ALICEVILLE — Pickens County Hospital Authority, T. E. Bryant, Reform, received low bid of $289,000 from C. W. Williams, Marion, for 20-bed hospital.

ANNISTON—U. S. Engineer, Mobile, plans facilities, Anniston Ordnance Depot.

ANNISTON—Corps of Engineers, 536 Old Post Office Bldg., Atlanta, Ga., let contract to Capital City Construction Co., Montgomery, Ala., at $782,000, for 95-unit housing project.

ANNISTON—Corps of Engineers plans 175-unit Wherry Act housing, Fort McClellan.

BIRMINGHAM — Congressional delegation urged Budget Bureau to include from $3,000,000 to $5,000,000 in next year's budget to begin construction on $91,000,000 Howell Mill Shoals Dam on the Coosa River.

BIRMINGHAM—Trailways Lines plan new depot, $250,000.

BIRMINGHAM — Hunter Street Baptist Church Congregation received low bid of $729,945 from J. F. Holley, Birmingham, for educational building and sanctuary.

BROOKLEY FIELD — Corps of Engineers, Mobile, will receive bids on or about January 9 for aircraft parking apron, Brookley Air Force Base.

FLORALA—Florala Telephone Co., Inc., received low bid of $274,214 from Irby Construction Co., Jackson, Miss., for rural telephone project.

FOLEY—Navy Department, Public Works Office, Pensacola, plans rehabilitation of Naval Base, Barron Field; $300,000.

FORT McCLELLAN — Corps of Engineers, Mobile, plans ground force facilities, chemical corps school; $8,000,000.

FORT McCLELLAN—U. S. Engineer Office, Mobile, plans WAC Base; $10,000,000.

GADSDEN—Goodyear Tire & Rubber Co. plans warehouse and office building; $1,600,000.

HAMILTON — City selected Lawrence S. Whitten, Brown Marx Bldg., Birmingham, as architect for manufacturing plant to be leased to Marion Mills; $300,000.

HUNTSVILLE—Corps of Engineers let contract to Shelby Construction Co., 1106 Canal St., at $929,680, for 120-unit housing.

MONTGOMERY — City plans lengthening and strengthening east-west runway and high intensity lighting, Dannelly Field; $294,000.

MONTGOMERY — First Methodist Church Congregation let contract to John T. Clarke for addition; $258,980.

REFORM — Pickens County Hospital Authority, T. E. Bryant, received low bid of $322,891 from A. C. Samford, Albany, Ga., for 30-bed hospital.

SHEFFIELD—Housing Authority let contract to Tri-Cities Construction Co., Sheffield, Ala., at $315,355 for 46-unit housing.

ARKANSAS

ARKANSAS—Bureau of Public Roads allocated $7,268,084 for highways.

BENTON — City plans runway, taxiways and entrance road; $100,000.

LITTLE ROCK—Spartan Aircraft Co. applied to Defense Materials Procurement Agency for certification; plans aluminum facility to consist of an alumina plant and an aluminum reduction plant, a power plant, a carbon plant and a rolling mill to turn out coiled sheet; $102,000,000.

LITTLE ROCK—City plans paving parking area: strengthening N-S runway, Adams Field; $95,468.

PINE BLUFF—U. S. Engineer, Little Rock, received low bid of $546,677 from F. O. Gilbert, Inc., Bossier City, La., for storage facilities, Pine Bluff Arsenal.

SALINE COUNTY—Housing and Home Finance Agency plans 250 permanent housing units for Saline County.

DISTRICT OF COLUMBIA

WASHINGTON — Bethany Baptist Church has N.P.A. approval for building; $354,000.

WASHINGTON—First Church of Nazarene, 7th and A Sts., NE, has N.P.A. approval for church; $313,507.

WASHINGTON—Perpetual Building Association has N.P.A. approval for office building; $3,000,000.

WASHINGTON — National Association of Letter Carriers has N.P.A. approval for office building; $1,500,000.

WASHINGTON—W. C. Evans Tobacco Co. has N.P.A. approval for warehouse, 1215—3rd St., NE, cost $165,000.

WASHINGTON—Bureau of Public Roads allocated $2,350,543 for highways.

FLORIDA

FLORIDA — Bureau of Public Roads allocated $7,979,807 for highways.

BELLE GLADE — Palm Beach County Board of Public Instruction, 301 N. Olive Ave., West Palm Beach, received low bid of $395,860 from Don Hillier & Sons, Pahokee, for high school.

CLEARWATER—West Coast Hospital Association let contract to Clearwater Construction Co., 300 N. Osceola Ave., Clearwater, at $330,827, for Morton Plant Hospital addition.

COCOA—Corps of Engineers, Jacksonville, let contract to Duval Engineering & Contacting Co., 1746 E. Adams St., Jacksonville, at $671,793, for skid strip, Patrick Base.

COCOA—Navy Dept., Public Works Office, let contract to Zaret Construction Corp., 1901 West Ave., Miami Beach, at $299,902, for additional fuel storage facilities, Launching Area, Air Force Missile Test Center.

COCOA—Corps of Engineers, Jacksonville, received low bid of $254,978 from Bradford Builders, Inc., Miami Beach, for addition to fuel storage facilities, Patrick Air Force Base.

COCOA—Corps of Engineers, Jacksonville, received low bid from J. Hilbert Sapp, Inc., P. O. Box 2053, Orlando, at $936,529, for Missile Assembly Shops, Air Force Missile Test Center, Patrick Base.

EGLIN FIELD — Corps of Engineers, Mobile, Ala., let contract at $556,748 to Acme Construction Co., Mobile, Ala., for ammunition area expansion.

FORT LAUDERDALE — Broward County Board of Public Instruction received low bid of $133,983 from Duffey Construction Co., Inc., 1395 NW 21st St., Miami, for Bennett Elementary School.

FORT MYERS—First Methodist Church of Fort Myers received low bid of $156,327 from Clearwater Construction Co., 300 N. Osceola Ave., Clearwater, for building.

FORT PIERCE—City Commission let contract to Westinghouse Electric Corp. at $381,705 for 7,500 KW turbo-generator unit for municipal electric plant.

HIALEAH—Dade County Board of Public Instruction plans junior-senior high school; $500,000.

HOMESTEAD—Dade County Board of Pub-

(Continued on page 28)

Joplin Building Occupied by Division Engineer

The $132,000 Joplin district office of the Missouri State Highway Department is completed and occupied.

Two stories high, the building is approximately 57 by 67 feet with a full basement. It is fireproof with exception of the interior doors.

The foundation is reinforced concrete. Frame work is structural steel, walls are tile faced with brick. Robertson's cellular steel sub-floors have been used. The reinforced concrete floors are covered with asphaltic tile floor covering.

Heating is done by a low-pressure steam system, using gas for fuel. The air-conditioning is Curtis water-cooled. Fluorescent lights are installed throughout the building.

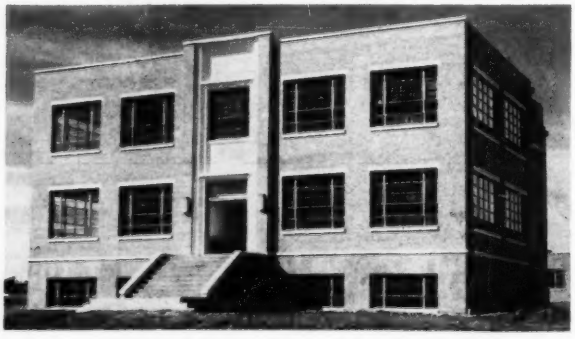
J. Russell Ellis is division engineer at Joplin. Principal members of his staff there are N. H. Bass, division construction engineer; P. G. Parrish, maintenance engineer; M. A. St. Clair, office manager.

Occupying the second floor of the building is the design room with an office for E. J. Struewing, division surveys and plans engineer, and D. W. Newton, right-of-way engineer.

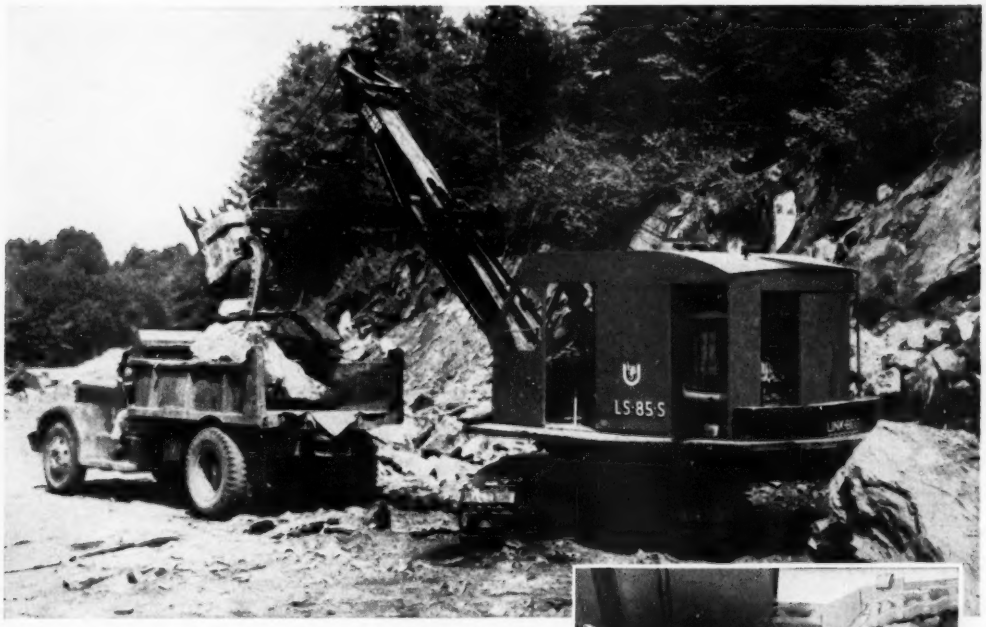
The division materials laboratory and the office of F. E. Gulick, division engineer of materials, is located in the basement.

Architect for the new building was Trueman E. Martinie of Joplin. Johnson Construction Co. of Springfield was the contractor.

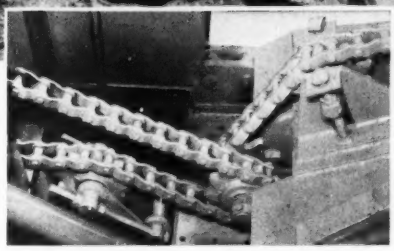
Below—New $132,000 Joplin district office of the Missouri State Highway Department is a 57 by 67-foot, two-story building with reinforced concrete foundation, structural steel frame and tile walls faced with brick.



Here's why operators call Link-Belt Speeder the HIGH OUTPUT, LOW UPKEEP SHOVEL-CRANE



General Contractor Thomas R. Rawson, Woburn, Mass., assigns his Link-Belt Speeder Shovel Crane to tough jobs—like cutting a new roadway through virgin rock-clay ledges on Route 9 for the State of Massachusetts. Company owns two other Link-Belt Speeder machines.



LINK-BELT SPEEDER From its all-welded boom and dipper sticks to its massive all-welded crawler base . . . these husky Shovel-Cranes have what it takes to stand up under heavy digging operations—year in and year out.

And when it comes to work—the Link-Belt Speeder asks for more and more! Quickly convertible, you can use it on big or small jobs . . . keep it working, making profits all the time.

Learn more about the Link-Belt Speeder—the machine with the *speed* for high output, the *stamina* for low upkeep, the *stability* for extraordinary digging and lifting.

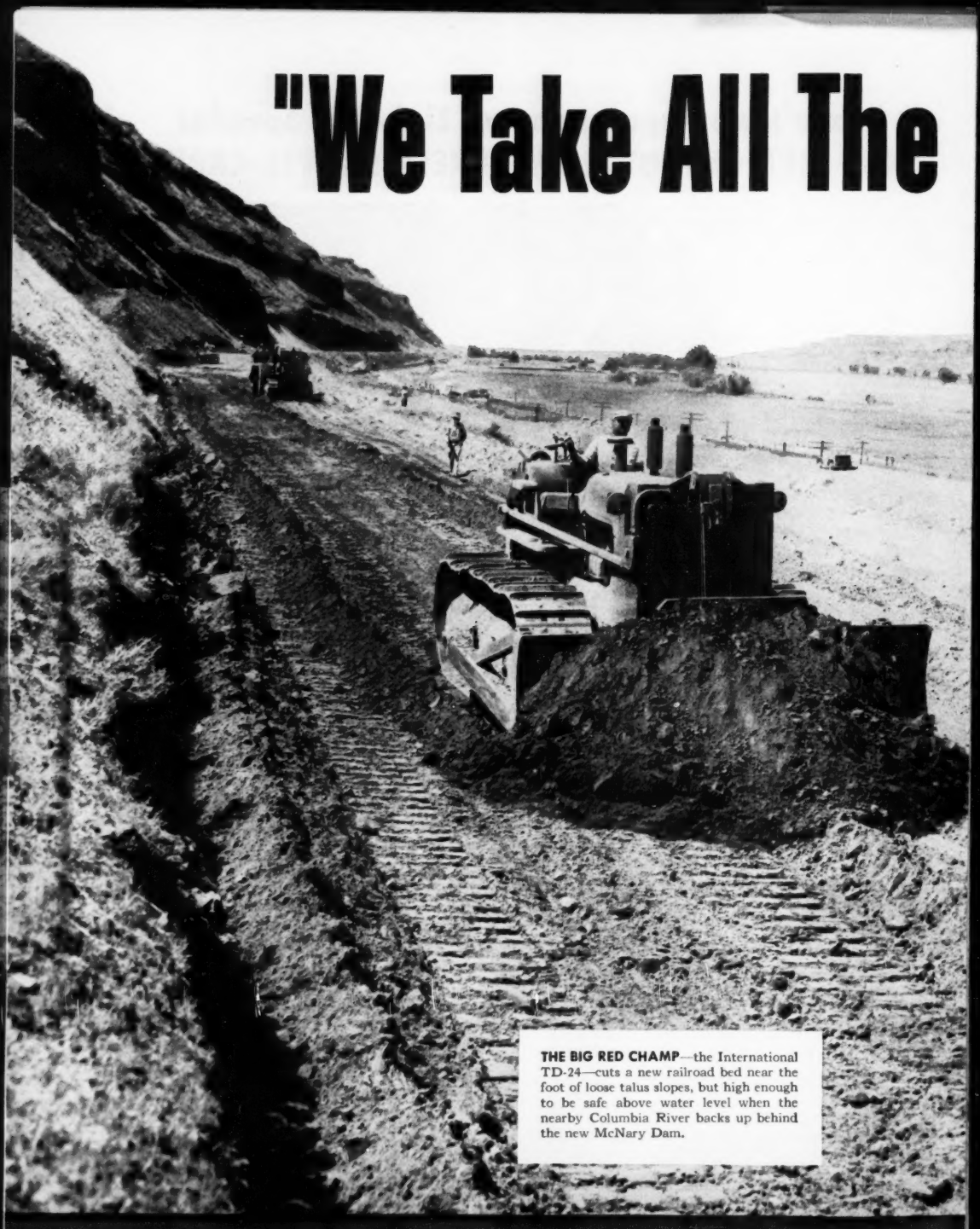
INDEPENDENT CHAIN CROWD
plus these outstanding features

- ✓ Heavy-duty, all welded construction . . .
- ✓ Designed to assure short, positive turns in steering
- ✓ Wide, long frame for ground-hugging stability
- ✓ High ground clearance — nothing to snag or foul . . .
- ✓ Fully convertible for all attachments

LINK-BELT SPEEDER
CORPORATION
12,652

Builders of the most complete line of shovels, cranes and draglines
CEDAR RAPIDS, IOWA

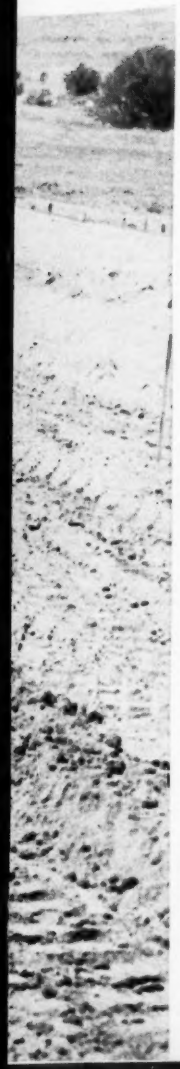
"We Take All The



THE BIG RED CHAMP—the International TD-24—cuts a new railroad bed near the foot of loose talus slopes, but high enough to be safe above water level when the nearby Columbia River backs up behind the new McNary Dam.

TOUGH JOBS"

One man and his Big Red TD-24 handle hardest assignments for western contractor



Out on the big Union Pacific relocation job north of the McNary Dam site, Cardon & Cox—subcontracting for Utah Construction Co.—have an International TD-24 shuttling back and forth from one end of their section of the project to the other, doing the hardest jobs wherever they may be.

TD-24 operator Wilbur Strootman says, "We take all the tough assignments, and do them faster and better than any other tractor on the job. This TD-24 is the best tractor I've ever been on. I really go for it."

Here are five big reasons why—five advantages that make the Big Red TD-24 the work champ of the world:

TD-24 Power—148 maximum drawbar horsepower, more than any other crawler on the market.

TD-24 Speed—8 forward speeds, 8 reverse. Moves loads faster, gets back faster for a faster work cycle.

TD-24 Operation—Synchromesh transmission, you shift "on-the-go." And you go up or down one speed without declutching.

TD-24 Steering—Fingertip steering for pivot turns, feathered turns, turns with power on both tracks.

TD-24 Starting—Quick push-button starting in any weather.

Want to know more? Ask a friend who owns a TD-24. And ask your International Industrial Distributor both about the TD-24 and about his fast field service and complete shop facilities. You'll be a TD-24 man from then on in!

INTERNATIONAL HARVESTER COMPANY, CHICAGO 1, ILLINOIS

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POWER THAT PAYS

INTERNATIONAL POWER PAYS OFF ON THIS BIG RAILROAD RELOCATION PROJECT

Southern Construction Projects

(Typical and Important Reports Excerpted from Daily Construction Bulletin)

FLORIDA

(Continued from page 24)

lic Instruction, James T. Wilson, Supt., 275 NW 2nd St., Miami, let contract to Bradford Builders, Inc., 1101 Lincoln Road, Miami Beach, at $197,906, for A. L. Lewis Elementary School.

MIAMI — 62nd St. Housing Corp. let contract to North Atlantic Contractors, Inc., 301 NE 62nd St., at $189,600, for 50-unit apartment and store.

MIAMI—City let contract at $202,333 to H. Wright & Son, 1050 NE 5th Terrace, Ft. Lauderdale, for sidewalk improvements.

MIAMI—Dade County Board of Public Instruction let contract at $661,333 to Zaret Construction Corp., Miami Beach, for junior high school.

MIAMI—Board of Dade County Commissioners received low bid from Troup Brothers, Inc., at $695,007, for maintenance areas, NW & SE, Miami International Airport.

MIAMI BEACH—Kenin & Posner, 16 Court St., let contract to Louis Kenin, 1728 Alton Rd., at $1,000,000, for 198 rooms, 2555 Collins Ave.

OPA-LOCKA—City, F. S. Arnold, Clerk, 777 Sharazad Blvd., let contract to J. Y. Gooch Co., Inc., 1205 Congress Bldg., Miami, at $275,750, for public safety building.

ORLANDO — Orlando Utilities Commission let contracts for water distribution system as follows: water main system, Joe Reinertson, Miami, $99,513; elevated tank, Taylor Iron & Supply Co., Macon, Ga., $84,870; service pump, Burford, Hall & Smith, Atlanta, Ga., $21,020; filter controllers, gauges and surface wash mechanism, operating tables and filter underdrains, W. D. Taulman & Assoc., Atlanta, $32,451; cone valve and sluice gates, Chapman Valve Mfg. Co., Indian Orchard, Mass., $15,293; hydraulic gate valves, M&H Valve & Fitting Co., Orlando, $13,988, and cast iron pipe and fittings, American Cast Iron Pipe Co., Birmingham, Ala.; Robert & Co., Assoc., Atlanta, Engrs.

PENSACOLA — Officer-in-charge of Construction, Naval Air Station, plans 200-unit housing project.

PENSACOLA—Navy Dept., Public Works Officer, let contract to Henry G. Dupree Co., Jacksonville, at $1,037,174, for steam, air, gas, oil and water distribution system, Naval Air Station.

ST. AUGUSTINE—State Board of Control, W. F. Powers, Sec., Board of Control Education Bldg., Florida State University, Tallahassee, received low bid of $141,490 from Arthur Perry, Inc., Jacksonville, for dormitory for negro girls at Florida School for Deaf & Blind.

ST. PETERSBURG—Pinellas County Board of Public Instruction, 305 Haven, Clearwater, let contract at $192,964 to Collins & Lewis Construction Co., 541 N. Monroe St., Tallahassee, for 74th Street Elementary School.

SANFORD—Southern Bell Telephone Co. plans new building to cost approximately $250,000 to be located between French & Laurel Sts.

SANFORD — G. Medwin Peek, Pioneer Bldg., DeLand, Archt. for proposed Bert Fish Memorial Hospital; $767,000.

TALLAHASSEE—State Road Dept. let contract at $985,019 to Scott Construction Co., Thomasville, Ga., for replacement of two wooden bridges over Escambia River.

WEST PALM BEACH—Corps of Engineers, Jacksonville, will receive bids on or about December 27 for airfield paving and drainage, Palm Beach International Airport.

GEORGIA

GEORGIA—Bureau of Public Roads allocated $11,446,484 for highways.

ALBANY—Navy Dept., Public Works Office, Charleston, S. C., let contract to H. M. Pofford, Jr., Waycross, at $432,400, for drainage ditch and sanitary sewer outfall.

ATLANTA—Crescent Stages, Inc., Modern Coach Corp., and Smoky Mountain Stages, Inc., interested in constructing $450,000 new motor bus terminal.

ATLANTA — Overnite Transportation Co. received low bid of $104,622 from Strother-Barge Co., 189 Cain St., NE, for motor freight terminal.

CAMP STEWART — Post Quartermaster, Purchasing and Contracting Office, let contract to Ed L. Powers, Jesup, at $268,265, for improvement to mess halls.

COLLEGEBORO — Georgia Teachers College plans physical education building.

FORT OGLETHORPE—Board of Education received low bid of $121,989 from E. G. Maxwell, Rossville, for Fort Oglethorpe Elementary School.

FULTON COUNTY — C. L. Rhodes, P. O. Box 290, Decatur, has contract at $158,348 for runway, lights and drainage, Fulton County Airport.

HINESVILLE — Liberty County Board of Education received low bid of $192,921 from Shafter Construction Co. for elementary school.

MACON—Board of Water Commission let contract at $309,560 to J. W. Meadors, Jacksonville, Fla., for raw water intake and pumping station.

MARIETTA—Cobb County Water Authority, County Courthouse, received low bids for waterworks: Division 1, treatment plant, Arthur Pew Construction Co., Atlanta, $838,890; Division 2, supply lines, E. W. Bacharach, Kansas City, Mo., $386,000; Division 3, pipe work, Section No. 1, L. F. Wilder, Birmingham, Ala., $172,181; Section No. 2, Nichols Construction Co., Atlanta, $46,885; Section No. 3, L. F. Wilder, $100,642; Division 4, grading, J. E. Jordan, Marietta, $16,000, and Division 5, electrical, Acme Electric Co., $24,496.

VALDOSTA — Knox Corporation, Thompson, plans 239-unit housing project; J. N. Bray Co., Valdosta, plans 40-unit housing project; R. R. McCall Construction Co., Valdosta, plans 21 units.

KENTUCKY

KENTUCKY—Bureau of Public Roads allocated $8,693,265 for highways.

Central Kentucky Natural Gas Co. let contract to L. R. Young Construction Co., Olney, Ill., for 8 miles of 12-inch coated pipe line in Winchester, Kentucky, area.

Corps of Engineers propose dam on Cumberland River, 11 miles from Kuttawa.

DOE RUN—Mathieson Hydrocarbon Corp., Baltimore, Md., let contract to Dravo Corp. for loading dock on Ohio River.

LOUISVILLE—Housing and Home Finance Agency plans 200 housing units, Camp Breckinridge.

LOUISVILLE — Federated Department Stores, Inc., plans store on old Lincoln Park.

LOUISVILLE—Stauffer Chemical Co., New York, N. Y., plans chemical plant; first unit will cost approximately $2,000,000 and will be followed by other units.

LOUISVILLE—Kentucky Synthetic Rubber Corp. started $1,300,000 alteration program changing from a "hot" to "cold" rubber plant.

LOUISIANA

LOUISIANA—Bureau of Public Roads allocated $7,660,875 for highways.

BATON ROUGE—State Board of Education let contract at $132,489 to A. B. Broussard, Sr., for Baton Rouge Trade School.

BATON ROUGE—U. S. Senate has given approval for construction of toll bridge or bridges across Sabine Lake between Louisiana and Texas.

CHALMETTE—Kaiser Aluminum & Chemical Corp., Henry J. Kaiser, Pres., announced steps are involved in proposed $100,000,000 expansion program.

CROWLEY — City plans 70-block paving project; $165,000.

HOUMA — Terrebonne Parish Police Jury let contract to D. D. Pittman Contracting Co., Inc., 3022—48th St., Metairie, New Orleans, at $124,000, for library.

JONESVILLE—City Council plans voting January 3 on $175,000 bond issue for expansion of light plant and waterworks.

KENNER—Mayor and Board of Aldermen will issue $150,000 bonds to erect city hall, jail and recreation hall, and fire station.

MANY — State Board of Education, Baton Rouge, let contract at $140,000 to C. B. Construction Co., Natchitoches, for trade school.

NEW ORLEANS — New Orleans Passenger Terminal Committee, 501 S. Saratoga, received low bid of $2,055,483 from Chris Larsen Co. for new Union Station Terminal Building.

NEW ORLEANS—Union Passenger Terminal Committee, 501 S. Saratoga, received low bid of $168,697 from Gervais F. Favrot Co., Inc., for north portion of coach yard facilities of Union Passenger Terminal.

NEW ORLEANS — First Baptist Church Congregation plans new building; $1,415,000.

NEW ORLEANS—City will receive bids December 28 for construction of Gentilly Blvd.-New Orleans Terminal Co., underpass, at Florida Ave.; $900,000.

NEW ORLEANS — Naval Station of New Orleans let contract at $220,000 to W. A. Bisso, Sr., 1003 Magazine St., for removal and disposal of wooden drydock.

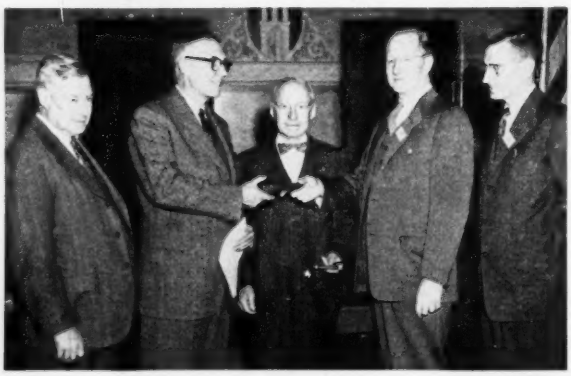
NEW ROADS—City approved $550,000 bond issue for water mains extension and install sanitary sewerage.

PINEVILLE—Office of Commissioners, Division of Administration, Baton Rouge, received low bid of $105,375 from R. J. Jones & Sons, Alexandria, for psychiatric nursing home, Central Louisiana State Hospital.

PLAQUEMINES—U. S. Corps of Engineers

(Continued on page 30)

Below—Three past presidents of the Baltimore Post, Society of American Military Engineers, watch as retiring President, B. Everett Beavin, relinquishes the gavel to his successor, William H. Sandlas. In the picture, left to right, are Fred W. Steiner, Mr. Beavin, Clarence C. Neher, Mr. Sandlas, and Frank K. Gayle. Other officers of the post are Col. R. Whitaker, vice president; J. A. Cecce, secretary-treasurer; W. C. Severinghaus, assistant secretary-treasurer. Directors include W. G. Armstrong, Mr. Gayle and Mr. Beavin.



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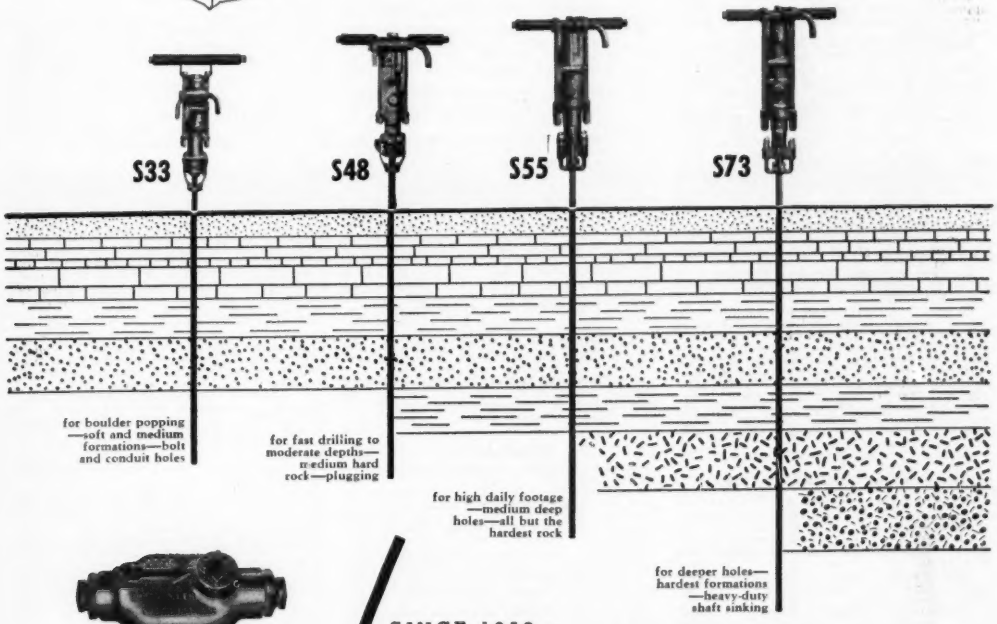
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S55
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for boulder popping —soft and medium formations—bolt and conduit holes
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THE QUALITY LEADER IN COMPRESSORS, PUMPS AND ROCK DRILLS

Southern Construction Projects

(Typical and Important Reports Excerpted from Daily Construction Bulletin)

LOUISIANA

(Continued from page 28)

let contract at $122,080 to Monroe J. Wolfe, New Orleans, for earthwork and railroad embankment on Mississippi River Levees.

PLAQUEMINES PARISH—Corps of Engineers let contract at $118,515 to T. L. James & Co., Inc., Kenner, for one mile of concrete highway.

RAYNE—Housing Authority received low bid of $498,000 from Shelby Construction Co., New Orleans, for 76-unit housing project.

SHREVEPORT—Youree Hotel let contract to Werner Co., 1320 Pierre Ave., for annex; $580,000.

SHREVEPORT—Texas Eastern Transmission Corporation let contract to Anderson Bros. Corp., Houston, Tex., for Jobs 8 9 and 10, extending from Ohio River near Portsmouth, Ohio to a point near Connellsville, Pa., total of 217 miles, for construction of 791 miles of 30-inch pipeline from Kosciusko, Miss., to Connellsville, Pa.

STERLINGTON — Commercial Solvents, New York, announced plans for expenditure of $20,000,000 for expansion.

VILLE PLATTE—Town let contract to J. H. Jenkins, Inc., at $588,591, for street paving and drainage improvements in Road District No. 6.

WELSH—Jeff Davis Parish School Board approved $600,000 bond issue for new school and improvements and renovatings at existing facilities.

WESTWEGO—Mayor & Board of Aldermen let contracts for water supply, Division A, Acme Construction Co., P. O. Box 1424, Mobile, Ala., for water treatment plant at $454,000; Division B, Walker Construction Co., Cleveland, Texas, for water distribution system at $174,550; Division C, Chicago Bridge & Iron Co., 412 National Standard Bldg., Houston, Texas, for elevated tank at $52,480; Division D, Keller Construction Corp., 7900 Palm St., New Orleans, for pumping station at $58,984.

MARYLAND

Board of Directors of Chesapeake & Potomac Telephone Co. of Baltimore, approved expenditures of $4,592,000 for improvements and expansion.

Western Maryland Railway is completing a second extension of the Port Covington pier, $1,500,000.

University of Maryland has architectural plans for engineering studies under way for building projects: general library building in Baltimore, cost $400,000; 3 buildings to cost $2,525,550 at College Park include a general library, $2,000,000; poultry department staff building, $325,550 and addition to girls' gymnasium, $200,000; for Princess Anne, chemistry and physics, $450,000; engineering and mechanical arts, $540,000; general library, $375,000; home economics, $300,000 and general warehouse, $50,000.

Bureau of Public Roads allocated $5,171,877 for highway aid.

State Board of Education has approval of $4,848,660 for improvements at the following colleges: $531,000 at Bowie; $1,500,000 at Coppin; $1,311,900 at Frostburg; $506,860 at Salisbury and $998,900 at Towson.

ABERDEEN—Corps of Engineers, Baltimore, plans six school shop buildings, cost $1,071,000.

ABERDEEN—Corps of Engineers, Baltimore, plans hollow charge laboratory, $270,000.

ABERDEEN—Corps of Engineers, Baltimore, selected J. L. Faisant & Associates, Inc., Baltimore, as Architects & Engineers, for design of artillery and fire control shop.

ANDREWS—Corps of Engineers, Baltimore, received low bid of $416,846 from C. H. Lawson, Williamsburg, Va., for alert taxiway and extension runway 1-19.

ANNAPOLIS—U. S. Naval Academy has plans in progress for buildings.

BAINBRIDGE—Fifth Naval District, Public Works Office, Norfolk, Va., plans 229 unit housing project.

BALTIMORE—Board of Estimates let contract at $237,604 to Trinity Bldg. & Construction Co., 4420 E. Eager St., for highway paving.

BALTIMORE—City Council has bill authorizing the acquisition of land between Potee and Hanover Sts. for park purposes; $500,000 allocated in 1952 budget.

BALTIMORE — Board of Estimates allocated $1,000,000 for the elimination of the Potee Street grade crossing.

BALTIMORE—Board of Estimates received low bid from Wildberger-Best Construction Co., Inc., 1700 Friendship St., Baltimore at $285,964, (1) and at $115,338 (2), and at $371,167 (3), for fire engine house and civil defense control center.

BALTIMORE—Kane Transfer Co. received low bid from Lacchi Construction Co., 2023 Maryland Ave., at $154,451 for truck terminal, Russell St.

BALTIMORE — South Baltimore General Hospital received low bid from Cogswell Construction Co., at $258,800 for addition and alterations.

BALTIMORE — Zoning Commission approved proposed $12,000,000 housing project at Ingleside Avenue and National Pike in Catonsville.

BALTIMORE — Property Sales Co., will build 68 residences, Pentridge Road, $511,600.

BALTIMORE — State Roads Commission sold $25,000,000 bonds to Smith, Barney & Co., Alex. Brown & Sons, and Harriman Ripley & Co., for highway construction.

BALTIMORE—Maryland Military District, announced plans for Reserve Armory, $382,000.

BALTIMORE—Fairhaven Construction Co., construct 100 dwellings, $626,000.

BALTIMORE—Enoch Pratt Library Trustees asked Board of Estimates to submit to voters a $1,500,000 bond issue for branch libraries.

BALTIMORE—Board of Estimates received low bid of $492,985 from Columbia Construction Corp., 1301 Towson, for extension of Jones Falls trunk sewer north of Druid Hill Park.

BALTIMORE—State Roads Commission let contract at $1,920,133 to the Williams Construction Co., for extension of 5.3 miles to dual highway, Rt. 40.

BALTIMORE COUNTY—Baltimore County Commissioners, H. Streett Baldwin, Pres., proposed $16,000,000 for county schools during 1952.

EASTON—City sold $500,000 bond issue for sewer and water system improvements.

EDGEWOOD—Corps of Engineers, Baltimore plans additions to steam distribution system, Army Chemical Center, $310,250.

NORTH BEACH—Mayor and City Council received low bids for proposed sewerage system from Charles J. Spielman Co., Inc., 2901 Maisel St., Baltimore, Section 1 at $421,036; Section II, $125,950 and Section III, $54,776.

PORT TOBACCO—Charles County Board of Education let contract at $184,400 to M. M. Dean, Hollywood, for school.

SALISBURY—Board of Education let contract at $1,678,488 to William F. Sutter, Nescopeck, Pa., for junior high school.

UPPER MARLBORO — Prince George's County Board of Education let contract at $651,398 to P. F. Dulaney, Washington, D. C., for Hillcrest Heights School.

MISSISSIPPI

Bureau of Public Roads allocated $7,904,316 for highways.

ABERDEEN — Board of Supervisors of Monroe County selected Feemster Connett & Cook, Tupelo, as Architects & Engineers, for proposed Textron Mississippi, Inc., fabric plant.

BILOXI—Corps of Engineers, Mobile, Ala., receive bids on or about January 8, for training group headquarters building and alterations and extension to communications building, Keesler Air Force Base.

BOONEVILLE—City approved issuance of $100,000 bond issue for financing site and factory for Hospitals Liquids, Inc., Chicago, Ill.

CLEVELAND—Mississippi Power & Light Company, let contract to Ebasco Services, Inc., New York, N. Y., for new 210,000 kilowatt steam electric generating station, consisting of two generating units having capacity of 105,000 kilowatts each.

HATTIESBURG — Poultry Processing Plant, c/o Marcus London, Trustee, received low bid of $119,911 from D. R. Hall, Laurel, for poultry processing plant.

JACKSON — City Council sold $1,000,000 bond issue to Deposit Guaranty Bank & Trust Co. of Jackson, for sewers.

JACKSON — City Council let contract at $189,468 to Harbert Construction Corp., Birmingham, Ala., for approximately 38,475 lin. ft. of 6, 10 and 12-inch cast iron water main and necessary appurtenances on various streets.

JACKSON—Board of Trustees of Jackson Municipal Separate School District let contract at $218,255 to Campbell Construction Co., for addition to Jones Negro Elementary School.

JACKSON—Board of Trustees of Jackson Municipal Separate School District let contract at $213,082 to L. A. Harvey, for repairs to Bailey Junior High School.

LUCEDALE — Board of Supervisors of George County received low bid of $348,077 from I. W. Havard, Canton, for new wirebound box manufacturing building to be leased to Great Southern Box Co.

YAZOO CITY—Mayor and Alderman plan special bond election on $1,700,000 electric system revenue bonds for improving electric generating, transmission and distribution system.

MISSOURI

MISSOURI—Bureau of Public Roads allocated $13,659,910 for highway construction.

FLORISSANT—City let contract at $131,100 to J & S Construction Co., Overland, for sanitary relief sewers.

JEFFERSON CITY—Missouri State Highway Commission, let contract at $667,537 to Victory Construction Co., and Paul Krummel, St. Louis, for sewers.

JEFFERSON CITY—Missouri State Board of Public Buildings, selected site, Jackson & Dunklin, for 2-story and basement office building, $400,000.

KANSAS CITY—Corps of Engineers let contract to S. Patti Construction Co., 1340 Admiral, has contract for railroad, buildings, installing pipe and utilities for bulk storage facilities for five 100,000 barrel petroleum storage tanks near Parkville; Chicago Bridge and Iron Co., furnishing and installing the tanks; $2,200,000.

PATTONVILLE — Board of Education let contract to C. Cristina Construction Co., at $405,800 for high school additions and alterations.

ST. LOUIS—Board of Public Service, completed plans for improvements and modernization of City Hospitals, $1,629,000.

ST. LOUIS — McDonnell Aircraft Corp., Lambert-St. Louis Airport, Robertson, let contract to G. L. Tarlton Contracting Co., 5505 Dale Ave., for test hangar, $3,500,000.

ST. LOUIS—Missouri State Highway Commission, Chief Engr., Jefferson City, received low bids for sewers from Victory Construction Co., Paul Krummel, St. Louis, on alternate 1, open cut at $667,557 and alternate 2, tunnel, $743,264.

ST. LOUIS—Municipal Bridge Commission approved ordinance for Missouri Pacific Railroad to use approx. 1335 feet of city-owned track at western approach to MacArthur Bridge, between Eighth St. and Twelfth Boulevard.

ST. LOUIS—Laclede Gas Company, 1017 Olive St., let contract to Frazier-Davis Construction Co., for additions and alterations to central service building.

ST. LOUIS—Lange Brothers, Angelica St., let contract to Fruin-Colnon Contracting Co., 1706 Olive St., for phosphate fertilizer storage, $100,000.

ST. LOUIS—U. S. Corps of Engineers received low bid of $164,080 from Hough-Cowgur & Co., Inc., for restoration of timber piling clump dikes at Brooks Point.

ST. LOUIS—Corps of Engineers received low bid of $239,111 for seepage relief wells at Chain of Rocks Canal.

ST. LOUIS—U. S. Corps of Engineers let contract at $79,917 to Volimar Bros. Const. Co., foot of Victor Str. for the construction of pier fenders on the Chain of Rocks Canal Bridge Highway.

ST. LOUIS—Corps of Engineers received low bid of $239,800 from Patton-Tully Transportation Co., Memphis, Tenn. for bank protection at Price Landing.

TIPTON—Co-Mo Electric Cooperative has $480,000 loan for 175 miles of distribution line serving 646 new rural consumers, additional headquarters facilities, and system improvements including 3.5 miles of new tie line.

NORTH CAROLINA

ASHE COUNTY — Blue Ridge Electric Corp., has preliminary engineering studies prepared for dam and hydroelectric plant on South Fork of New River, $15,500,000.

ASHEVILLE—City received low bid of $1,607,965 from Wannamaker & Wells, Inc., Orangeburg, S. C., and Cherokee, Inc., Columbia, for construction of dam on Swannanoa River.

Above—Among those attending the recent meeting held at the Mayflower Hotel, Washington, by Region IV members of the Associated Equipment Distributors were: Left to right, J. H. McClung, Jr., McClung-Logan Equipment Co., Inc.; Representative E. H. Hedrich, of West Virginia; Ridgely Frey, Free State Equipment Co.; C. A. Nash, Rish Equipment Co.; Representative Cleveland Baily, of West Virginia; M. B. Garber, of the National Production Authority; Representative Burnside, of West Virginia; O. W. Robinson, West Virginia Mine & Supply Co.; L. C. Basham and Calvin Basham, West Virginia Tractor & Equipment Co.; R. L. Richardson, Richardson Tractor Co., and Frank G. Knight, Highway Machinery & Supply Co., Inc.

Below—Others at the equipment distributors meeting included: Left to right, O. W. Robinson, West Virginia Mine & Supply Co., regional director; S. M. Bemiss, of Bemiss Equipment Co., and Frank G. Knight, standing, Highway Machinery & Supply Co., member and chairman of program committee; Harry J. Hush, A. E. D. vice president, and J. H. McClung, Jr., McClung-Logan Equipment Co., also of program committee. Middle picture — Left to right, L. C. Basham, West Virginia Tractor & Equipment Co.; J. H. McClung, Jr.; K. O. Hobbs, Contractors Service, Inc.; Harry L. Teal, Highway Machinery & Supply Co.; O. W. Robinson, and M. B. Garber, National Production Authority; Right Picture—Reception Committee, left to right, Arthur Backstrom, president, Virginia Equipment Distributors Association; Ridgely Frey, Maryland Equipment Distributors Association; David Parker, Tar Heel Equipment Distributors Association, and C. A. Nash, president, West Virginia Equipment Distributors Association.

ASHEVILLE — Oerlikon Tool and Arms Corp. of America, Lt. Gen. K. B. Wolfe, Pres., plans large plant on 1,500-acre tract in Swannanoa Valley east of City.

BESSEMER CITY—Town let contracts for water and sewerage improvements; Section I, III & IV, at $283,329 to Gilbert Engineering Co., Statesville; Section II, tank, at $24,340 to Chicago Bridge & Iron Co., Atlanta, Ga.

CAMP LEJEUNE—Navy Department, Public Works Office, selected Carr & J. E. Greiner Co., Durham, as Architects and Engineers for design of bridge, intracoastal waterway.

CHARLOTTE—First Baptist Church Congregation received low bid of $469,358, from J. L. Coe Construction Co. for educational building.

CHARLOTTE—City let contract to Peden Construction Co., 39 Mayberry St., Greenville, S. C., at $169,976 for Sch. I; to Grannis & Sloan, Inc., Fayetteville, at $204,231, Sch. II, and to Thompson-Arthur Paving Co., Greensboro, at $12,192, Sch. III, site improvements of new terminal area, Douglas Municipal Airport.

CLINTON — Eastern Carolina Regional Housing Authority received low bid of $474,980 from T. A. Loving & Co., for housing project.

EDENTON — Navy Department, Public Works Office, Norfolk, Va., let contract to Ferguson Corp., Hampton, Va., at $273,528 for jet aviation fuel storage.

FORT BRAGG — U. S. Engineer Office, Wilmington let contract to T. A. Loving & Co., Goldsboro, N. C., and W. H. Weaver Construction Co., Greensboro, N. C., $10,000,000 for Wherry Act Housing.

FORT BRAGG—F.H.A. approves 1,000-unit housing project, $9,191,000.

GOLDSBORO—Eastern Carolina Regional Housing Authority received low bid of $539,890 from T. A. Loving & Co., Goldsboro, N. C., for housing project.

GOLDSBORO—City let contracts for water filtration plant, Section 1, Industrial Builders, Anderson, S. C., $496,930; Section 2, filter equipment, Roberts Filter Mfg. Co., $96,800; Section 3, plumbing, Bell-Askins Plumbing & Heating Co., Goldsboro; Section 4, Bell-Askins Plumbing & Heating Co.; Section 5, electric, Thompson Electric Co., Raleigh, $27,581; and Section 6, pumps, Morris Machine Works, Charlotte, $27,663.

GREENSBORO—Housing Authority plans two housing projects, Henry Louis Smith Homes, white project; Morningside Homes, Negro project, $5,225,417.

GREENVILLE — East Carolina Teachers College received low bid of $706,422 from R. K. Stewart & Son, High Point, for library.

LEXINGTON—YMCA plans $500,000 building.

LUMBERTON — Housing Authority received low bid of $834,600 from W. H. Weaver Construction Co., Greensboro, for housing project.

RALEIGH—Carolina Natural Gas Corporation plans line from Transcontinental Gas Pipe Line Corporation pipe line to Thomasville and Lexington.

RALEIGH—City let contract for raw water facilities as follows: Section 3, Wannamaker & Wells, Orangeburg, S. C., at $442,300; Section 4, Purser & London, Charlotte, $21,642; Section 5, Thompson Electric Co., Raleigh, $59,571; and Section 7, Blythe Brothers, 2911 Hitchison Ave., Charlotte, $532,313.

RALEIGH — Board of Education let contract at $895,227 to George W. Kane, Durham, for junior-senior high school for negroes.

SHELBY—Local Government Commission, W. E. Easterling, Sec., Raleigh, sold $875,000 bond issue to R. S. Dickson & Co. & Associates, for waterworks.

WAKE COUNTY—Local Government Commission, W. E. Easterling, Sec., Raleigh, sold $1,060,000 bond issue to Harris Trust & Savings Bank & Associates, for school buildings.

WILMINGTON — Tidewater Power Company approved merger with Carolina Light and Power Co., $16,000,000 transaction; has plans for new 100,000 horsepower steam generating plant.

WILSON—Local Government Commission, W. E. Easterling, Sec., Raleigh, sold $550,000 bond issue to First Boston Corporation & Associates, for water improvements.

OKLAHOMA

Bureau of Public Roads allocated $9,460,432 for highways.

McALESTER — Consolidated Gas Utilities Corp., let contract to Waico Engineering & Construction Co., Tulsa, Okla., for compressor station, $400,000.

CUSHING—Deep Rock Oil Corp. let contract to M. W. Kellogg Co. for lubricating oil plant.

OKLAHOMA CITY — State Highway Department is studying plans for the modernization of five major state roads. Estimated cost, $100,000,000.

OKLAHOMA CITY—City, Earl M. Simon, Clerk, received low bid of $287,689 from Imperial Paving Co., Oklahoma City, for paving, Tulakes Airport.

OKLAHOMA CITY—Mercury Oil Refining Company plans expansion program, $3,195,000.

OKLAHOMA CITY—Sears, Roebuck & Co., plans retail store, $3,000,000.

PONCA CITY — City plans new terminal building, extending and strengthening runway, $409,430.

SOUTH CAROLINA

Bureau of Public Roads allocated $6,288,745 for highways.

ANDERSON—South Carolina Housing Authority approved low-rent Public Housing Authority projects totaling $7,000,000 for 22 municipalities.

(Continued on page 45)

Above—High up the side of a rocky Maryland gorge, a Marion diesel shovel with two-yard bucket loads into a Dumpster during construction of an access road to the site of the $4,476,000 Liberty dam that will add 43,000,000,000 gallons of water to the Baltimore municipal supply. Approximately 159,000 cubic yards of excavation will be required for the project. Estimates are that 80 per cent of this will be rock.

Liberty Dam Design Discussed by Engineer

by

Bernard L. Werner

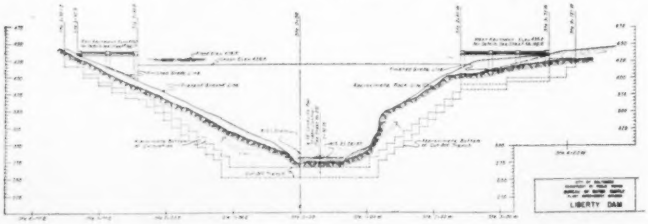
Deputy Water Engineer

On August 16 of this year the average daily consumption of water in Baltimore City and the adjacent counties amounted to 224.5 million gallons. This is the highest daily consumption recorded to date. The average for 1950 was 187 million gallons, and for the past nine months in 1951 the average was approximately 200 million gallons daily.

When you consider that the safe yield of the present Gunpowder Falls development, based on the 1930-1934 drought to be 148 m.g.d., one realizes how fortunate we have been to be able to supply the raw water demands of the community without any serious restriction or curtailment in water use. This situation prevailed only because of sufficient rainfall, well distributed, during the past decade or more.

The Patapsco River was mentioned as a possible future water supply source for Baltimore City for a great many years in the past. Even at the time the development of the Gunpowder Falls was first under consideration, the Patapsco River was studied as a possibility. In those days it was discarded in favor of the Gunpowder Falls because the cost of development was greater than that of the Gunpowder. This was logical on account of its greater distance from the water use area.

Below—Ground profile of the site of the dam, which will be the third impounding dam for Baltimore and the first of its size on the Patapsco. The structure will be 704 feet long and 160 feet high. Arundel Corp., Baltimore, is the contractor at $4,476,000.



The Patapsco River is formed by the junction of the North Branch and the South Branch near Marriottsville, Maryland, and flows in a southeasterly direction into the Chesapeake Bay, south of Baltimore. Both branches rise in the central part of Maryland, and the whole basin, which has an area of about 350 square miles, lies within this state.

The drainage basin is hilly and largely under cultivation. It has no lakes or artificial reservoirs, and the flow of the stream is variable. Freshets do not, however, cause any large rise in the water because of the steep slope of the stream. The usual range of stage within a year is about three or four feet.

Rocky River Bed

The bed in most places is rock. The banks are of rock and very little of the land is subject to overflow. The Baltimore and Ohio Railroad follows the course of the river over most of its entire length.

The river carries a small volume of water. However a large number of water power installations were developed along its course because of the steep slope of the stream. These were small but valuable owing to their proximity to the Baltimore Metropolitan area.

The North Branch of the Patapsco River is formed by the junction of the East and West Branches at the town of Patapsco, in Carroll County, Maryland, and

flows in a generally southerly direction for a distance of approximately 14 miles to Marriottsville, Howard County, where it joins the South Branch. It is the boundary between Baltimore and Carroll counties.

Following the recommendation of the Advisory Engineers on Future Water Supply in 1934, ten dam sites were reviewed on the North Branch of the Patapsco. Storage sites of any importance on the south branch are lacking. Even the smallest of them would result in flooding of the B. & O. Railroad tracks, which are at relatively low elevation and only a short distance above the bed of the stream.

As a result of the investigations of these sites, the present site was chosen as the most favorable location for a dam on the North Branch of the Patapsco River. It has the advantage of adequate rock foundation, a relatively short distance across the stream, and satisfactory impounding volume per unit of height.

At this site, which is approximately two miles downstream from the Liberty Road, the impounding or storage reservoir will have a catchment area of 164 square miles with the stream bed at elevation 275 and a storage capacity at elevation 420 of 43.3 billion gallons, or approximately 133,000 acre-feet, which is almost exactly the combined capacity of both the Loch Raven and Prettyboy reservoirs.

Length of the shore line of the reservoir at elevation 420 is 82 miles, will cover an area of 3100 acres, and will extend eight miles in length in Baltimore and Carroll counties. About 8600 acres of land have been purchased and there remain approximately 600 acres yet to be acquired.

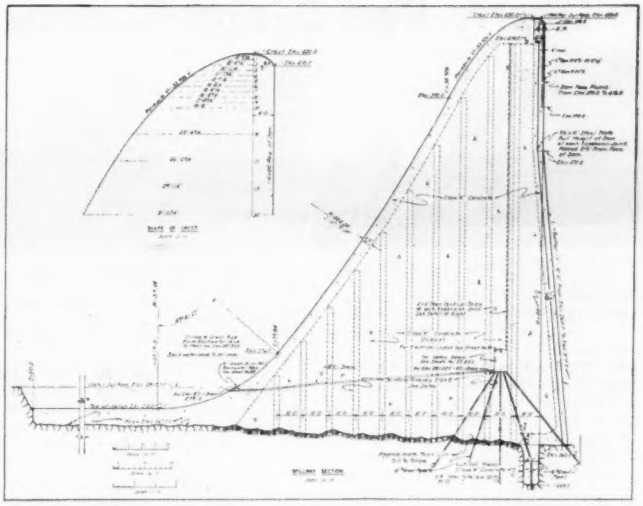
Dam 704 Feet Long

The dam will be 704 feet in length with a crest 480 feet long, the east abutment 92 feet and the west abutment 132 feet, and will have a maximum height of 160 feet. Thickness of concrete at the base will be nearly 130 feet. It is estimated that approximately 159,000 cubic yards of unclassified material will be excavated. Of this amount we estimate 80 per cent will be rock. The dam as presently designed will require 154,000 cubic yards of concrete, exclusive of the gate house intake tower.

Sixty-two core holes were drilled on the site. Four holes were 8-inch cores for which no log was kept, and the cores were left on the ground. Fifty-eight holes were 2¼-inch, for wich logs were kept and the cores were boxed.

Thirty-four holes were drilled on the east slope, six in the river bed, and eighteen on the west slope. The average depth of overburden on the east side is 3.7 feet and the average thickness of unsound rock is 4.0 feet, a total average depth to sound rock of 7.7 feet. The average depth of overburden on the west side is 6.8 feet, and the average thickness of unsound rock is 5.8 feet, a total average depth to sound rock of 12.6 feet. Over the areas included by the drill holes the average excavation required to sound rock on the west side is 64 per cent more than on the east side.

According to Dr. Joseph T. Singewald, Jr., consulting geologist to the Bureau of Water Supply, the rock at this dam site is a dark green schist consisting of four principal minerals in relative abundance of the following order: Chlorite, hornblende, quartz and feldspar. The entire dam site lies within the mica schist facies of the Wissahickon schist, but the rock is more basic than the normal development of this schist. It is characterized by more chlorite and hornblende and less quartz and feldspar than is usual in this formation. Dr. Singewald further reported that the physical character of the rock, the structural position of the rock and the depth of sound rock below the surface are all satisfactory and combine to make this an excellent dam site. Without exception, all contractors who visited the site prior to the preparation of their bid expressed this same opinion.



Above—Section of the spillway of the 480-foot spillway which will connect with a 92-foot abutment on the east and a 132-foot abutment on the west. Approximately 154,000 cubic yards of concrete will be placed. Fly ash is to be used for the first time on a Baltimore water bureau project. The concrete will be a three-bag mix. Maximum lift of gravity sections is specified at five feet. The contractor expects to use steel forms. This will facilitate dissipation of excess heat from surfaces.

In an Act passed by the General Assembly in 1933, Chapter 526, the Water Resources Commission was created and was given the authority to supervise the design, construction, reconstruction, alteration and repair of dams and reservoirs on any stream or body of water, wholly or partly within the State of Maryland (except tidal waters).

Spillway Design Formula

This Commission set up a formula to be used in estimating the spillway design flood for the construction of the Liberty Dam. The requirements under the formula are mandatory except where permission is obtained in writing from this Body to use a smaller design flood than that set up in the formula $Q = 5000\sqrt{A}$, where Q equals the peak flood in cubic feet per second to be safely discharged by the spillway and A equals the drainage area in square miles.

There has been a tendency since 1933, by the Corps of Engineers of the U. S. Army particularly, and other Federal Agencies generally, to increase the coefficient of 5000 to 7500 or more. For this reason the Advisory Engineers on Future Water Supply, Dr. Abel Wolman and Mr. G. J. Requardt, in 1943, requested that the design flood for the proposed dam be computed by using several acceptable methods for making flood analysis. The following three methods were used:

(1) Unit Hydrograph

On August 11, 1939 there was a storm located in Pennsylvania, New Jersey and Delaware, the data for which was prepared by the North Atlantic Division, Philadelphia District Office of the Corps of Engineers, U. S. Army, the maximum average depth of rainfall over an area of 165 square miles being approximately 16 inches in 18 hours. By transposing this storm on the watershed of the Patapsco River above Marriottsville, the peak flow was calculated to be 67,200 cfs.

(2) The flood committee of the Boston Society of Civil Engineers published in 1930 a report of the 1927 flood. This report covered not only descriptions and engineering data of the storm rainfall and flood damage, but also a general engineering study of the whole subject of floods in New England, and developed a flood formula based on the flood hydrograph. This analysis, which also included the development of a flood characteristic curve, by its emphasis on the flood hydrograph as a measure of the flood producing characteristics of a given storm, may be said to have laid the foundation for

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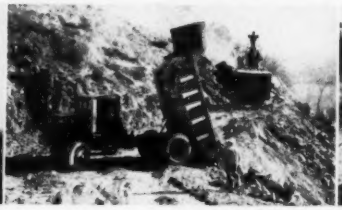
Liberty Dam Design Discussed by Engineer



Above—Left—Worthington Blue Brute 500 compressor supplies air for the Jackhamers drilling into the rocky site of Liberty dam. The unit is equipped with a 150-horsepower Caterpillar engine and is one of two working on the project. Middle—A Euclid Dumpster discharges its rocky load, while the Marion diesel shovel works in the background. Right —International TD-18A with Bucyrus-Erie bulldozer spreads muck excavated from the recently finished 17-mile tunnel that will carry the Patapsco water to the Baltimore filtration plants.

(Continued from preceding page)

most of the modern methods of flood analysis.

The third method used was the "Curve Fitting Method for Analysis of Flood Records." This technique provides a direct method for statistical analysis of the upper portion of the true frequency series of flood rises on any stream. The method is based only on the assumption that if the frequency behavior of floods follows some uniform law it should be possible to express this law mathematically.

Minimum Requirements Set

After checking the design flood by these various methods it was concluded that the formula of $Q = 5000 \sqrt{A}$ as recommended by the Maryland Water Resources Commission as the minimum requirement for estimating the design flood was a reasonable one. However, the design flood officially adopted and approved was 46,000 cfs. We were able to reduce the run-off to this figure because the storage provided above the flow line of a large storage reservoir on a small stream, as the water rises above the spillway crest, slows down the discharge and effects a considerable reduction in the magnitude of peak flood flows on the stream.

It is conceivable that larger floods could be provided for, especially if we used the maximum possible storm rainfall, assuming a high percentage of run-off and also a large run-off from melting snow. If to this required depth over the spillway we add free board for wave action, we would have reached a size of spillway that would be prohibitive economically.

While it is advisable to know the absolute limits of design, by adding all the maximum conditions together, there is the question of the advisability for providing for such safety. Some of the maximum peak floods reached by this type of analysis could be of such quantity that there would be few structures left in the whole river valley were they ever attained, and the failure of a river dam would not add greatly to the total destruction. We realize, also, that important structures, such as the Liberty Dam, impounding over 40 billion gallons of water, require a high degree of safety.

Historically, the greatest flood on the Patapsco between 1896 and 1908 and 1928 to date was equivalent to about 120 cfs per square mile at the site of the Liberty Dam. The assumption of an intensity of 390 cfs per square mile reduced to 280 cfs per square mile on the basis of the outflow hydrograph curve is certainly most conservative. In our opinion this conservatism is justifiable.

The proposed Liberty Dam is a straight gravity dam. It is customary to confine the term gravity dam to solid masonry and concrete dams which resist their imposed loading mainly by the weight of the structures themselves. They are roughly triangular in cross-section and are mostly constructed straight in plan, although sometimes they deviate from a straight line axis in order to take full advantage of the topography of the site. Loch Raven and Prettboy dams are other local examples of the straight gravity type.

There are two direct ways in which a gravity dam may fail:

1. By sliding—(a) on a horizontal or nearly horizontal joint above the foundation; (b) on the foundation; (c) on a horizontal or nearly horizontal seam in the foundation.

2. By overturning on a horizontal joint —(a) within the dam; (b) at the base; (c) at a plane below the base.

Slide, Overturn Discussed

The direct cause of sliding is the presence of horizontal forces greater than the combined shearing resistance of the joint or base, and the static friction induced by the vertical forces.

The direct cause of overturning, not preceded by some other type of failure, if tension is ignored, is the presence of horizontal forces great enough in comparison with the vertical forces to cause the resultant of all forces acting on the dam above any horizontal plane, including uplift, to pass outside of the limits of the dam.

In the text, Engineering for Dams, Vol. II, by Creager, Justine & Hinds, six rules are recommended which should be followed in the design of gravity dams in order that the stability of the structure is guaranteed. At this time I hardly think it worth while to go into detail concerning these requirements. However, in the stress analysis prepared by the Bureau of Water Supply, much discussion took place with the consultants for the Water Resources Commission of Maryland regarding the value of the tangent of the angle between the vertical and the resultant of all forces, including uplift, acting on the dam above any longitudinal plane. This is known as the sliding coefficient.

Values for the coefficient of friction for masonry on masonry and masonry on good rock foundations have been assumed variously between 0.6 and 0.75. It is our contention that a value of 0.75 is not excessive, where the rock formation is good. The Water Resources Commission of Maryland requires a value of 0.65 to be used. In order to meet this requirement it was necessary to batter the upstream face on a 1 to 10 slope between elevations 260 and 370 in order to get additional weight; also underdrains were provided to reduce the uplift pressure.

Although the sliding factor is the most common of all criteria for estimating the stability of gravity dams and has been used by designers for many years, the weakness of this criterion is that it does not take into account the restraining effect of the shearing strength. This fact was recognized by the engineers for the Bureau of Reclamation some years ago and the use of the traditional sliding factor was discontinued and was replaced by a factor called the "Shear Friction Factor of Safety."

This may be stated as the summation of all vertical forces (including uplift) times the coefficient of friction, plus the area times the unit shear resistance, all divided by the summation of the horizontal forces. The dependability of this criterion of safety depends largely upon the validity of the assumed shearing strength of the material. This is the principal uncertainty involved in evaluating the shear-friction factor of safety.

Although the sliding factor analysis was used exclusively until recently and is still preferred by some designers the shear-friction factor of safety is gaining in favor. Properly used, either should produce a safe design. We used both.

In calculating the uplift pressure for the Liberty Dam we considered that it acted on the entire base from the heel of the dam to its toe. The uplift pressure at the upstream heel was calculated to be two-thirds of the full hydrostatic pres-

sure existing at this point, using maximum upstream water level for which the dam is designed. The uplift pressure at the downstream toe was considered to be the full hydrostatic pressure due to the maximum tailwater level which will probably exist. At points above the maximum tailwater level the uplift at the downstream face was considered to be zero. The uplift pressure was considered to decrease uniformly from the upstream to the downstream face.

Because of the drainage system that is provided an uplift allowance was made for that area between the drainage system and the upstream face of the dam equal to the full hydrostatic pressure existing at the upstream face. Over the rest of the area, a head equal to that produced by the maximum tailwater level was assumed.

Analysis Includes Ice Pressure

Included in the design analysis for the Liberty Dam was ice pressure. The necessary allowance to be made for ice pressure is another indeterminate factor. No dams are built to withstand the maximum thrust that expansion from freezing action could exert. This maximum thrust is approximately 70 tons per square foot or 140 tons per linear foot of dam with an ice sheet 2 feet thick. The requirement of the Water Resources Commission is to design for an ice thrust of 20,000 pounds per linear foot of dam, which we have done with the result that there was seven pounds tension in the upper 30 feet of concrete which we have taken care of by placing a small amount of ½-inch reinforcing steel near the upstream face.

Allowance was also given to the deposition of silt against the upstream face of the dam. In making this allowance, studies were made regarding the unit weight of the material which will bear against the dam. From coarse to fine materials the angle of repose decreases to zero when the material is commonly called liquid mud.

Material of this kind is usually very impervious, and it is reasonable to believe that it will prevent percolation at the base, so that there will be little or no uplift pressure. We designed for both conditions independently and used the one which gave the greatest dam section.

In addition to the quality control regularly exercised, control of the concrete construction methods contribute largely toward the quality of the completed structure. Foremost among control measures are means for limiting the temperature rise of the mass concrete and thus reduce the undesirable thermal stresses and cracking.

Under the rapid rates of mass concrete placement made possible by modern construction methods, the heat of hydration of the cement cannot escape from the massive structure as fast as it is generated during the early ages of the concrete, and the temperature of the concrete rises above the placing temperature. The maximum value reached depends on the initial concrete temperature, the amount of heat generated by the cement, the dimensions of the mass and rate of placing, surrounding temperature conditions, thermal properties of the concrete, and the amount of heat extracted by artificial cooling, if such cooling is used.

Temperature Reduction

Reduction in temperature to an ultimate stable condition, by gradual dissipation of the stored-up heat or its removal by artificial means, is accompanied by contraction.

Reduction of the difference between the maximum and ultimate temperature of concrete will decrease the tendency for uncontrolled cracking. Several methods or combination of methods have been used for reducing the temperature rise in mass concrete. These include (a) use of low-heat cement; (b) reduction in cement content; (c) replacement of a part of the cement by pozzolanic material; (d) limitation of the rate of placement so that a greater part of the heat of hydration is lost from the top surface of the lift during construction; (e) placing of concrete during cool weather so that the heat of hydration will raise the temperature to, or only slightly above, the ultimate temperature; (f) precooling concrete ingredients to reduce the placing temperature of the concrete; (g) early removal of forms and use of steel forms to facilitate loss of excess heat from the surfaces; (h) artificial cooling, begun at the time or soon after the concrete is placed, which not only reduces maximum temperature rise but also cools concrete to any desired temperature within a short time and permits grouting of contraction joints within a reasonable time after concrete placement.

As we do not intend to grout contraction joints as such, we did not think the expense of an artificial cooling system was warranted. However, some of the methods outlined above have been followed.

Upper — Ingersoll-Rand Jackhamers are being used to drill into the rocky site of the Liberty dam on the Patapsco River ten miles northwest of Baltimore —Lower—Marion diesel shovel loads a big rock into Dumpster.

Type 2 Cement Specified

(a) We have specified Type 2 cement to be used. This is a relatively low heat cement. (b) The cement content has been limited to a three-bag mix per cubic yard for mass concrete. (c) Fly ash is being used to replace part of the cement. This is the pozzolanic material referred to above. (d) The lift of gravity sections has been specified to be a maximum of five feet in thickness and a minimum of 72 hours shall elapse between the placing of each successive course. (e) We understand that steel forms are to be used, although either steel or wood could be used according to the specifications.

The use of fly ash in the concrete is an innovation in construction for the Bureau of Water Supply.

With the increasing attention being given to the use of pozzolans, there has been a renewal of interest, originally developed about 15 years ago, in the potential benefits of employing fly ash as an admixture or replacement for part of the Portland cement in concrete. The wide availability and low cost of fly ash, combined with the suggestion that it may be used to replace cement, has led to a great many inquiries concerning it.

Fly Ash Described

Fly ash is the fine residue remaining after the burning of powdered coal. It is generally collected by means of precipitators from the flue gasses before they enter the stacks, to prevent its becoming a dust nuisance. Depending upon the type of coal and efficiency of burning, the composition and physical characteristics of fly ash may vary over a considerable range. A principal constituent is silicon dioxide which is generally present in amounts of 30 to 50 per cent. The quantity of carbon may vary from as low as one up to 30 per cent and, occasionally, even higher. Iron oxide and aluminum oxide make up most of the remainder, comprising from five to 25 per cent and 15 to 30 per cent, respectively. The fineness of fly ash, which is probably its most important single characteristic so far as concrete is concerned, may vary from as low as 1000 square cm. per gram to 5000

(Continued on page 56)

$164,403,534 Federal Aid for South's Highways

Federal Aid highway funds apportioned last month showed the sixteen southern states and the District of Columbia will receive $164,403,534 of the $500,000,000 authorization in the fiscal year beginning July 1, 1952.

Of the southern total, $76,950,927 will be applied to the federal aid highway system; $57,533,455 to secondary or feeder roads, and $29,919,152 to urban highways. For the entire country, the totals were $225,000,000 for the main highways; $150,000,000 for the secondary roads, and $125,000,000 for city routes.

Expended under supervision of the federal Bureau of Public Roads, the funds are apportioned on the basis of population, area and mileage of post roads on the main highways. The secondary and urban allocations are on a similar basis, except that the rural and city populations are used.

Apportionments by states in the South are, listed by total, and amounts for each federal aid highways, secondary or feeder roads, and urban highways:

Alabama — $9,875,936; $4,667,971; $3,621,928; $1,586,037;

Arkansas — $7,268,084; $3,659,614; $2,931,245; $677,225;

District of Columbia — $2,850,543; $1,082,813; $721,875; $1,045,855;

Florida — $7,979,807; $3,513,455; $2,295,574; $2,170,778;

Georgia — $11,446,484; $5,491,196; $4,190,994; $1,764,294;

Kentucky — $8,693,265; $4,062,250; $3,373,828; $1,257,187;

Louisiana — $7,660,875; $3,413,927; $2,472,350; $1,774,598;

Maryland — $5,171,877; $1,935,063; $1,182,205; $2,054,609;

Mississippi — $7,904,316; $3,946,486; $3,287,577; $670,253;

Missouri — $13,659,910; $3,369,052; $4,309,461; $2,981,397;

North Carolina — $11,664,902; $5,449,728; $4,659,539; $1,555,635;

Oklahoma — $9,460,432; $4,732,881; $3,394,931; $1,322,620;

South Carolina — $6,288,745; $2,985,798; $2,470,183; $832,764;

Tennessee — $10,142,649; $4,711,574; $3,680,474; $1,750,601;

Texas — $29,681,979; $14,305,046; $9,577,321; $5,799,612;

Virginia — $9,358,321; $4,204,200; $3,266,315; $1,887,806;

West Virginia — $5,295,409; $2,409,873; $2,097,655; $787,881.

Local Road Neglect Scored by A.R.B.A. Speaker

America's badly needed campaign of highway modernization and construction must be all-embracing, with secondary roads and city streets coming in for their fair share of attention, Ben F. Ostergren, manager of the County and Local Roads Division of the American Road Builders' Association, warned County Judges and Commissioners' Association of Texas at Corpus Christi. "If we call the great trunk lines the nation's traffic arteries, we must recognize local roads and city streets are veins, and both are necessary to a healthy circulatory system," he said.

"Since the war mobilization program got underway, controls have been set up that affect the whole highway program. These controls put the squeeze on both essential materials and road building equipment for both maintenance and construction. Since war production plants draw materials and parts from all over the nation, there is an inclination to emphasize the needs of the great primary systems with a corresponding neglect for the half-million miles of lesser roads which are vital to the existence of our people," Mr. Ostergren asserted.

"The Interstate Highway System which links the key cities of the United States is 38,000 miles in length, as compared to the 3.3 million miles of roads and streets in the entire nation," the speaker continued. "While the motor vehicle registration went over 50 million in 1951, it must be remembered that there has been a relatively large increase in farm automobiles and farm trucks, vehicles which use the local roads almost exclusively. Local roads have suffered materially from greatly increased rural traffic since the war. Like the small boy's suit, they not only wear out but are outgrown. To neglect local roads while concentrating on the primary highways would be like trying to extinguish a fire in part of a building while permitting another part to burn. To a marked degree, primary and secondary roads are interdependent."

The speaker called attention to the fact that some 26,000 communities in this country have no rail outlet and must depend upon highways for everything they require and for transportation in and out of town. A large part of these communities are served by local roads and are off the primary highways. Access by highway must be maintained at all times and under all circumstances, he declared.

Families living on the country's 6,000,000 farms depend upon local roads for delivering their products to market at any time, for mail deliveries, fire protection, doctors' calls and all the other services they now enjoy, thanks to the automobile and the rural road.

Petroleum Supply Rise Seen Future Need

This country's present refining capacity of 6.7 million barrels of crude oil per day is enough to meet present military demands and curtailed essential civilian requirements, Adam K. Stricker, Jr., of the business research staff, General Motors Corp., Detroit, said at the annual meeting of the American Society of Mechanical Engineers. He added, however, that though Western Hemisphere crude supplies are adequate to meet these demands for a few years, they would then have to be supplemented by supplies from other sources.

In commenting on the fact that the Petroleum Administration for Defense has recommended an immediate start on an increase in refinery capacity of one million barrels per day, Mr. Stricker said:

"It is beecoming apparent that even this is not enough, and although the petroleum companies are willing to expand at a greater rate, limitations on availability of materials, principally steel, place a very real restriction on our ability to expand. This expansion in crude production, transportation and refining, as well as in natural gas projects, primarily transmission lines, involves capital expenditures of billions of dollars."

In appraising the present situation, he stated, "it may safely be inferred that the nation will have a greater reserve from which to draw in meeting military requirements if it continues to expand its facilities to deliver petroleum products for civilian purposes. The larger our daily capacity, the greater is the cushion to meet peak military needs."

Engineer Conference Board Appointed for Industry

An extensive research program into problems involved in Engineering-Management Communication and the appointment of a Professional Engineers Conference Board for Industry, has been announced by L. L. Dresser, P. E., president of the National Society of Professional Engineers.

Under the newly announced program, several hundred top management executives in all segments of American industry who deal with engineers will be asked a series of questions on problems of interest to engineering and industry. Problems of engineering-management communication will be the first of a series of surveys.

Some of the other surveys which will be part of the extensive research project include: "How to Utilize Engineering Talent," "How to Attract Qualified Engineers," and "How to Train Engineers in Industry."

Engineer Shortage Seen Threat to Country

The serious shortage of engineers is one of the greatest problems facing the country today, Warren M. Rohsenow, assistant professor of mechanical engineering at Massachusetts Institute of Technology, declared at the annual meeting of the American Society of Mechanical Engineers.

He estimated the present shortage at 60,000, and placed industry's needs at 30,000 annually for normal replacement and growth. The number of engineers graduated annually will taper off—from 25,000 in 1952 to an estimated 12,000 by 1954, he said.

"The causes of the shortage are many," Prof. Rohsenow explained. "Low birth rate in the 1930's, unfortunate draft policies in World War II, blunders, national obtuseness and indifference, all contribute. Regardless of the reason there does exist at the present time a serious shortage of engineers and it does not seem likely that the near future will see this need satisfied."

Since it seems necessary for some time

to come that the United States remain adequately prepared militarily, which means continual technical growth, Prof. Rohsenow said, it is the obligation of the young engineer to resist attempts to remove him from engineering work.

"Whether he be a member of a civilian or a military organization he should exert his best efforts to obtain assignments which require him to employ his technical skills to the fullest extent," he continued.

Prof. Rohsenow pointed out that an important difference between the academic years and those spent in industry is that the school organization is run for the young engineer and also demands that he carry out a program of self-improvement, while in the business world, the industrial organization is run for itself and he must carve out his own career which means that he must initiate and execute his own program for self-improvement.

"Probably the most important thing for the freshly graduated engineer to remember is that his degree in engineering does not make him a professional engineer until after he has acquired much experience in applying the laws of science to the solution of engineering problems, and developed his ability to exercise mature judgment," Prof. Rohsenow said.

"In order to acquire these attributes it is absolutely necessary for him to develop a rigid program of self-improvement during and after his hours at work. This means that he must continually expend much greater effort than he is paid for by the company. His reward for this extra effort in addition to personal satisfaction is advancement within the company and within his profession."

Prof. Rohsenow said that, in general, very little effort is expended in encouraging the young engineer to embark upon a program of self-improvement. Though some companies with an indoctrination program do seem to get this message to those who participate in the program, this type of activity is not at all widespread.

"The Joint Engineering Council for Professional Development," Prof. Rohsenow said, "which is composed of representatives of all of the major engineering societies, is at the present time attempting to implement an active program to materially assist the young engineer along his path of professional development. The program at this time is in need of some widespread support from industrial organizations."

Makers Cite Stove Need

The Gas Appliance Manufacturers Association says 2,662,000 gas ranges — 2,152,000 for necessary replacements and 510,000 for new dwelling units—will be needed during the period ending next June 30.

Wendell C. Davis, defense regulation committee chairman of GAMA's range division, quoted the study as showing that an average modern gas range requires only 1.3 pounds of copper and brass, 1.7 pounds of aluminum, and four-tenths of a pound of nickel, which is "less of the most critical materials than any other type of range."

General Program Announced for Roadbuilders' Meet

The American Road Builders' Association has announced the general program for the golden anniversary meeting scheduled at the Rice Hotel, Houston, Texas, from January 21 to 24.

Monday, January 21, will be registration day. Breakfasts for the county and local roads division directors and secretaries of affiliated state groups will precede the first general session where subjects will include the Federal Highway System Status, State Highway Department problems and Large Scale Highway Program Finance.

Also on the initial agenda will be a luncheon meeting of the municipal and airport division, the annual meeting of the directors of the contractors' division and sessions for members of the manufacturers, county and local roads, municipal and airport, educational and Pan-American divisions. A dinner and business meeting for A.R.B.A. directors will climax the day.

The second day will start with a general session where discussions will include the Outlook for Federal Highway Legislation; Civil Airports in National Defense; Plan for Financing Nation's Highway Needs, as well as a symposium on the economics of expressways between urban areas. Past President Enoch R. Needles will lead the resolutions committee.

Various committee meetings will follow the Road Builders' luncheon. These will be on clearing and grubbing, advancement of highway engineering, cement soil, calcium chloride, lime soils asphalt emulsion and tar soils stabilization. Technical sessions in the evening will cover the effect of heavy construction equipment on prepared soil bases and stability of soils foundations.

Four subjects planned at the third general session, Wednesday, January 23, are Highways in National Defense; Status of Pavement Loading Tests, Truck Industry Views on Weight Limitations and Value of Wire Fabrication in Concrete Slabs. Organization of a material and supplies division is planned for the afternoon. A "county potpourri" will follow.

On the program of the fourth general session, January 24, are talks on the Highway Role in National Transportation, Controls Versus Open Market for Steel, Construction Machinery and Equipment Outlook for 1952 and the Allocation Problems and the Outlook for Highway Steel next year.

Balance of the last day will be occupied by a Road Builders' luncheon, afternoon meeting of members who will hear the reports of the president, executive vice president and resolutions committee. Officers and directors will be installed at this session. A 6 P. M. reception and cocktail hour will be followed by the banquet.

South Gets $1,447,440 for Forest Highways

Federal funds appointed late last month for national forest highways $1,337,440 for fifteen southern states. Total of the allotment, which is authorized under the Federal Aid Highway Act approved September 7, 1950, was $20,000,000., with the larger proportion going to seven western states.

States below the Mason and Dixon line benefiting under the authorization are Alabama, $57,265; Arkansas, $271,176; Florida, $116,095; Georgia, $69,952; Kentucky, $41,126; Louisiana, $46,199; Mississippi, $94,236; Missouri, $101,619; North Carolina, $121,489; Oklahoma, $13,787; South Carolina, $65,472; Tennessee, $66,778; Texas, $63,368; Virginia, $129,890; West Virginia, $78,988.

Apportionments were made in proportion to the area and value of land in national forests in the various states. Expenditure of the funds will be under direction of the Bureau of Public Roads and will be mostly for modernization of obsolete roads or elimination of dangerous sections.

Kentucky Makes $510,588 Highway Awards

Kentucky Highway Commissioner W. P. Curlin has announced award of contracts totaling construction work on 16 miles of roads in eight counties at $510,588.

Projects financed by the two-cent gas tax and matching federal money totals $218,803 for six miles of construction. Other federal-aid projects totaled $174,797 for three miles of construction including a bridge in Adair county. Rural road projects financed by the two-cent gas tax alone total $116,986 for seven miles of construction.

Projects financed by the two-cent gas tax and matching federal money were listed in the following counties:

Crittenden — New Salem-Frances road, grade, drain, and traffic bound surface, 2.9 miles, Harry O. Wyse, Lexington, $118,631;

Shelby — Chestnut Grove-Todds Point-Prison Farm road, grade, drain and traffic bound surface, 3.6 miles, John Treitz & Sons, Louisville, $100,171;

Other federal-aid projects were listed in the following counties:

Adair—Columbia-Knifley road, bridge and traffic bound approaches, .9 mile, W. M. Hooper, Caneyville, $76,835;

Anderson — Lawrenceburg-Versailles road, grade, drain, and traffic bound surface, 2.1 miles, Derby Construction Co., Inc., Louisville, $97,961;

Rural road projects financed by the two-cent gas tax alone, all for reconstruction and traffic bound surfacing, were listed in the following counties:

Cumberland-Metcalf — Ferris Creek road, 3.4 miles, G&R Coal Co., Robbins, Tenn., $73,291;

Grant—Cordova-Pendleton County Line road, .6 mile, Tye & Wells, Falmouth, $12,099;

Larue — Buffalo-White City road, 1.2 miles, Sam Nally Co., Bardstown, $15,345;

Owen—Old Greenup Creek road, 1.6 miles, R. C. Durr, Walton, $16,250.

Above—Aerial view of the $5,000,000, 300-bed veterans' hospital Consolidated is now erecting at Loch Raven Boulevard and the Alameda, in north Baltimore

Consolidated Engineering's Achievement Record

WHEN a large chemical manufacturer recently announced plans for a multi-million-dollar plant in Louisiana a prominent Maryland firm was named as the contractor. That firm was the Consolidated Engineering Co., which this year is celebrating its fortieth anniversary as a contractor engaging in general work of almost every type.

The contractor had already done extensive construction for the chemical company which was now giving what is usually described as a repeat order. Many other large projects were written into the contractor's history. Hence, receiving the $7,000,000 award for the new plant was neither new nor novel.

Activities Far Flung

Moving to a far location, in this case about eleven hundred miles from headquarters, also is no unusual experience for the Consolidated company. Just prior to the Pearl Harbor attack the company, in collaboration with another large Baltimore organization, took the contract to build the naval air station at Puerto Rico. The original award was for $7,500,000, a figure that was finally raised to $128,000,000 as other projects and a third contractor were added to the venture.

$600,000,000 for 2071 Projects in Four Decades

The contracting company's development during its four decades has paralleled the growth of the community of its origin and the country as well. Practically every type of important structure is listed among its achievements. Industrial plants, communications, municipal facilities including sewers and water works, highways and bridges, electrification, housing, office buildings, stores and churches, to mention a few.

The first world war happened as the Consolidated company passed the halfway mark of its first decade. At that time it reached down into North Carolina to build $3,000,000 Camp Greene at Charlotte. The need for ships and steel at the start of that war had meant expansion of Baltimore's Sparrows Point area where such activities were concentrated. Consolidated forces erected the new industrial suburbs of Dundalk and St. Helena in that vicinity.

Below—John A. Stalfort, Consolidated Engineering president, who started with the original company as chief engineer and estimator.

Lauver

How inextricably the company's early history was being woven into the local fabric is illustrated by a large sketch hanging in the reception room of the general offices at Franklin and St. Paul streets, Baltimore. Captioned the "Consolidated City", the picture shows compositely the 333 major projects executed through 1923. The preponderance are located in Maryland and its environs. Farthest was at Birmingham, Ala.; others were in Virginia, North Carolina, Tennessee and the District of Columbia.

Operations Expanded

Passage of another fifteen years saw a bigger and stronger Consolidated Engineering Co. and still greater accomplishments. Many of Baltimore's better apartments were the company's work. Buildings at both Johns Hopkins hospital and university rose under its supervision. The War Memorial at Baltimore was a monument to its craftsmanship. Operations fanned out into York, Pa., Salisbury, Md., Charlottesville, Va., Myrtle Beach, S. C., where notable hotels were built.

A crowning feat of this period was the $17,500,000 building erected in Washington for the Department of Commerce. This huge rectangle with its five wings connecting across an interior court was described at the time of completion as the world's largest office building, a record which since has fallen to the Pentagon labyrinth.

The monumental stone and steel Commerce building is 1,050 feet long, 325 feet wide. It contains twenty-five acres of actual working space. Before it was finished approximately 28,000 separate blueprints were filed in the library of the general contractor, the Consolidated Engineering Co., which did the work in six months less than the specified time.

Stalfort Progresses

During these first two and one-half decades when Consolidated was pushing the roots of its achievements into many of the states east of the Mississippi River a Marylander who had received his civil engineering degree from Cornell in 1910

was progressing through its ranks. He was John Alfred Stalfort. He had started with the original business as its chief engineer and estimator.

Jack Stalfort, as he is known throughout the building industry, assumed the presidency in 1938 when the present executive group took over full management and responsibility for directing the manifold operations of the Consolidated company. Supporting him was another executive who came with the company several years after its inception—Clarence E. Elderkin, now executive vice president and treasurer.

With these two leaders, and T. Newell Cox, Herman W. Berger and Edmund B. Ward, all vice presidents with twenty-five or more years of practical experience as constructors, executives and administrators, the company is ready to handle construction of any type, character or mgnitude—anywhere, anytime.

World War II Contracts

Clouds of the second world war were on the horizon as the Stalfort-Elderkin combination embarked on the new era in Consolidated Engineering management. Two years had hardly elapsed before the company and its associate, the Arundel Corp., and later Hardaway Contracting Co., were asked to do the San Juan naval air station. Before the work was finished it had been expanded to twenty-four separate locations on six different islands in the Caribbean.

Other agencies of the federal government also acknowledged the ability of the company. Important contracts were received for war and industrial projects. Included were $20,000,000 in work at Camp Meade, and $30,000,000 at Patuxent River Naval Air Station, projects at Camp Holabird and the Coast Guard base at Curtis Bay, the big expansion of the Glenn L. Martin aircraft plant at Middle River and the Fairchild aircraft plant at Hagerstown; extensions to Bethlehem Steel's tidewater mills; expansions at the Sparrows Point and Key Highway shipyards and the new Bethlehem-Fairfield liberty and victory ship plant on another branch of the Patapsco River.

$7,000,000 Davison Plant

At the same time, Consolidated Engineering was doing a silica gel project for the Defense Plant Corporation at the Davison Chemical Company's Curtis Bay plant. This firm is the one which has just awarded the Consolidated Company one of its repeat orders in the form of the $7,000,000 contract for the plant to produce micro-spheroidal synthetic silica-alumina catalyst on the Calcasieu River six miles south of Lake Charles, La.

Construction slackened after the hostilities of the second world war ceased. Most work during that period had been either directly military, naval and airfield construction. Alert Consolidated officials immediately went to work negotiating orders from their many peacetime clients.

Among these were a new $3,000,000 machine shop for Crown Cork & Seal Co.; the new Schluderberg-Kurdle packing plant; the Western Electric cable building; Bethlehem and Davison projects; additions to the Fisher Body and Chevrolet plants, all Baltimore institutions either originally built or added to by Consolidated forces. The Seaford, nylon plant for the DuPont Co., and the $5,000,000 Buick-Pontiac-Oldsmobile assembly plant for General Motors at Wilmington were two big jobs in Delaware.

Above—Consolidated Engineering Co. remodeled the United States Capitol, practically reconstructing the Senate and House wings during the $6,000,000 task.

$600,000,000 in Business

Dollar volume of the work completed by Consolidated Engineering Co. from 1938, when the new management took over, to the end of 1944 amounted to approximately $260,000,000, including that performed under the joint venture in the West Indies. The value is about sixty million dollars more than the total amount for the period from 1911 to 1938. Estimates place the value of all work done during the company's existence at around $600,000,000 with a total of 2,071 projects.

Unsettled world conditions again are shifting the course of Consolidated operations, just as in the case of many other American construction companies. Much of its current fifty to sixty million dollars worth of work represents peaceful pursuits such as the $4,000,000 surgical building at Johns Hopkins hospital, the $3,500,000 Lexington market, the $3,000,000 Hutzler's store at Towson.

Other of its projects point in another direction. The $19,000,000 rehabilitation program at the Bainbridge, Md., naval training station and the $6,000,000 Westinghouse jet engine plant at Friendship International airport are indicative of the trend toward a decline in the privately-financed projects, which now are closely regulated by federal authorities, and an increase in defense and supporting construction, much of it government financed.

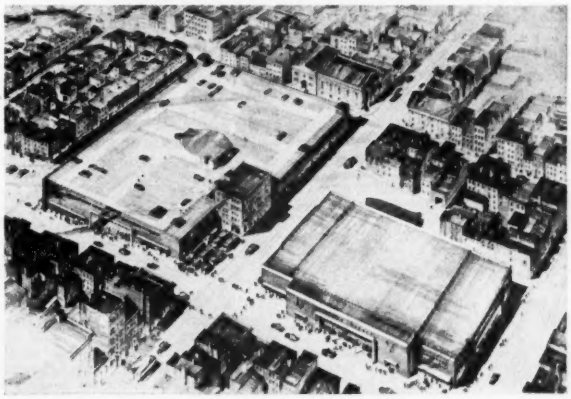
U. S. Capitol Project

Still recent in retrospect are the Friendship airport administration building, so widely acclaimed as one of the most advanced in modern construction and design and layout, and the reconstruction and remodeling of the hundred-year-old United States Capitol at Washington. The one involves approximately $4,000,000; the other was a $6,000,000 task done by Consolidated Engineering Co. in the Senate and House wings of the seat of the United States government.

Wartime construction by Consolidated Engineering Co. is listed on three pages of the company's brochure. The greatest number of projects is for the second world war. Caribbean Island work looms largest

(Continued on page 52)

Below—Few cities will have a market of such modern design and construction as the $2,500,000 project now being carried out at Baltimore by Consolidated Engineering Co. A retail market, farmers' market and parking garage are included.



Equipment . . . Manufacturers News

Detroit Diesel Starts On Job Training

Above—General Motors diesel mobile training unit is unloaded for two-day session at headquarters of Morrison-Knudsen Co., Inc., Boise, Idaho. Complete training facilities transported in a diesel-powered truck can be unloaded.

On-the-job training in the operation and maintenance of diesel engines offered by the Detroit Diesel Engine Division of General Motors has now been made available to Diesel owners and operators in practically all parts of the North American Continent.

The newest addition to the fleet of mobile training schools originally sponsored by the Division has been dispatched to Canada. Another unit recently installed in Mexico is starting to train Diesel men south of the border. These new additions bring the total number of mobile Diesel Training Schools operated by General Motors to a total of nine units.

T. L. Guarniere, Service Training Director of Detroit Diesel, says owners and mechanics in the United States have been quick to realize the advantages of this practical Diesel training and over 10,000 men in the construction, lumbering, mining, fishing and petroleum fields have already attended the schools. Similar training in the Trucking Industry is provided by General Motors Truck Division.

The schools have been held in the field on projects where Diesel-powered equipment is being operated and also in the establishments of GM Diesel and GMC Truck distributors and dealers throughout the country. The new Canadian unit, co-sponsored by the Diesel Division of General Motors Products of Canada, Ltd., has a schedule that will take it from coast to coast in the next 13 months.

According to Guarniere, the training course is open to Diesel engine owners and operators upon application to Detroit Diesel's distributors and dealers and GMC Truck dealers. The course offers practical knowledge and proper servicing techniques on GM Diesel engines and is designed to help owners and operators get maximum efficiency out of their units. It also keeps them up to date on the latest in approved GM Diesel maintenance and operating procedures.

The units are transported by Diesel-powered trucks and consist of over four tons of training aids including engines, cutaways, sub-assemblies, movies, slide films and charts. The Mexican unit is co-sponsored by General Motors Overseas Operations and is manned by factory-trained native instructors.

Large York Factory In Caterpillar Program

Caterpillar Tractor Co. announces an expansion program that will include a new factory in York, Pa., extensive additions to the Joliet, Ill., plant, and some improvements in the Peoria, Ill., plant.

The York plant will be built on a site of approximately 180 acres just outside the city limits and will cover about 360,000 square feet of floor area. About 1,000 persons will be employed.

Major additions to the Joliet plant will be a 230,000 square foot extension to the present manufacturing building, a separate parts building covering 280,000 square feet, and an addition to the heating plant. Over 1,900 people are already employed at Joliet and this number will be increased to over 3,000 next year. Upon completion of the new additions, about 1,000 more employees will be needed.

In announcing the program, President L. B. Neumiller said it has been made necessary by continuing expansion in the demand for Caterpillar machines and parts. The major portion of the program, he said, will be financed with a long term loan of $35,000,000.

Mr. Neumiller emphasized that the demand for Caterpillar machines has been at a high level ever since the beginning of World War II and has been augmented and intensified during the past year by orders from the military and increased activity in defense supporting industries.

He said the company has been unable to satisfy this augmented demand despite its post-war expansion program at Peoria and Joliet which provided for the construction of new buildings, the modernization and rearrangement of all older facilities, the installation of many new machine tools and the introduction of many improved mechanical processes.

The York Plant will be devoted to the production of track and track roller parts, and will enable Caterpillar to utilize eastern sources of steel which do not now supply its factories in Illinois. The plant's entire output will be distributed to dealers in Eastern United States and Canada and to export dealers served through East Coast ports. This addition will make possible improved arrangements and increased efficiency in the Peoria parts facilities.

The addition to the present manufacturing building at Joliet will be devoted to the production of service parts and will not only increase the company's total output but will also permit certain Peoria facilities to be used more efficiently, Mr. Neumiller said.

The new parts building will include all necessary processing, packaging, storage, and shipping facilities, together with an office and cafeteria. In operation, it will function like the Peoria Parts Department.

A new die and fixture building is being built at Peoria to permit future improvement in the layout of equipment in certain other buildings, and to further improve the efficiency of several manufacturing operations.

New office and shop buildings are being constructed at the Proving Ground near East Peoria, to provide additional space and facilities for the Research and Engineering Departments in carrying on their continuous program of developing and improving Caterpillar products.

Planning layouts of the Joliet and York facilities have progressed far enough to permit the placing of orders for machine tools and equipment. Permits for construction have been issued by the National Production Authority and Certificates of Necessity have been issued for fifty per cent of the cost by the Defense Production Administration. Engineering and architectural design has been started and construction of the buildings will begin as soon as materials are available. First manufacturing operations will start even before the buildings are fully completed.

Mr. Neumiller said that to whatever extent the company's growth may require expansion in new localities there would be no material effect upon operations at Peoria. Although no additional manufacturing facilities at Peoria are contemplated, he said that parts manufacturing facilities there have been expanded during the past two years and this expansion has enabled the shipment of much greater tonnages even in the face of an acute shortage of such basic materials as steel, copper and aluminum.

Upon completion of the new program, the company will supply parts to dealers from three principal locations—Peoria, Joliet and York. Eight emergency parts depots are already located strategically throughout the United States.

Major Changes in Barber-Greene Sales Organization

E. H. Holt *J. D. Tutner*

Major changes in the Barber-Greene sales organization have been announced by W. B. Greene, President and co-founder of the company, which manufactures asphalt plants and finishers, belt conveyors, bucket loaders, snow loaders, car unloaders, and ditchers.

W. B. Holder, formerly general sales manager, will head a new division, plans for which are now being formulated. Details are to be announced later.

E. H. Holt will become general sales manager, responsible for overall Barber-Greene sales policy and in direct supervision of the Aurora and domestic sales organization.

J. D. Turner, becoming director of publicity and promotion, will supervise publicity and advertising and, in addition, will work closely with Holt on the formulation of overall sales policy and sales promotion.

E. H. Holt started his career in construction by working for the New Mexico Department of Highways during his high

school summer vacations. Attending the University of Illinois, he specialized in Highway Engineering doing some research with Bituminous Paving material, receiving his B.S. Degree in Civil Engineering in 1939.

Almost immediately after graduation, he came with Barber-Greene as a field engineer starting new equipment, trouble shooting, working with experimental models in the field, etc.

During World War II he was assigned to the Office of Chief of Engineers in the research and development branch. There he was responsible for development, testing, and specifications preparation of military construction machines. He was subsequently assigned to the Engineers Board, roads and airfields branch, and later transferred to troop duty with the 1880th Engineer Aviation Battalion which did construction work in this country, North Africa, India and Burma.

After discharge from the service, Mr. Holt became area manager for Barber-Greene with headquarters at Washington. A little over a year ago he was called to Aurora to become Eastern Division Sales Manager.

J. D. Turner started in the Barber-Greene shop in 1925. In 1927 he moved to the advertising department specializing on job stories about B-G machines. Becoming advertising manager in 1929, he took the photographs, made the motion pictures, and wrote the original advertisements, publicity stories and sales literature on many of the now famous B-G products, including the asphalt finisher and the various bituminous plants.

He was made director of publicity in 1945, and created the Barber-Greene sales training course, which has now been attended in Aurora by over 800 B-G Salesmen from the U. S. and many foreign countries.

Mr. Turner wrote, and did most of the stereo photography for Barber-Greene's unique three dimensional color film "Highway U.S.A.," with its beautiful scenes throughout the country.

He has been a member of the B-G Management Board since it inception in 1948, and has made studies of the theoretical sales potential of B-G products, which form the basis for the company's sales operations.

Barber-Greene Company, which celebrated its Thirty-fifth Anniversary this year, is known for its pioneering of new developments in many fields.

Beginning with the now famous Barber-Greene standardized belt conveyor in 1916, the original "Self-Feeding" Bucket Loader was brought out the following year. Other ingenious B-G machines followed including special coal handling machines, snow loaders and the B-G vertical boom ditcher, which first gained national attention when it did job after job of cutting through Coral Rock during the Florida boom.

New Catalog Describes Bushwacker Machine

A new two-page catalog in color has been published on the Bushwacker, a heavy-duty, tractor-mounted machine for low-cost land-clearing operation.

A series of on-the-job action photographs illustrates the principle of operation, rate of production and final results at a typical job site. Complete specifications and operating data are included.

Copies of the catalog are available from International Harvester industrial power equipment dealers, national distributors for Bushwacker.

Marion Introduces "World's Largest Shovel on Two Crawlers"

A new 10 cubic yard mining and quarry type machine described as the world's largest, most powerful shovel on two crawlers has been announced by Marion Power Shovel Co. of Marion, Ohio.

It is the Marion 191-M for which many impressive performance features are claimed, including the following:

A 10 cubic yard heavy duty shovel with small-machine cycle time; more strength and more power, in terms of digging effort and speed, per cubic yard of capacity; greater travel speed and maneuverability than most small machines; load trucks of the 50-ton class in three or four passes; loads gondola rail cars quickly; heavily built throughout for the world's toughest digging jobs; electric or diesel electric power; Ward-Leonard control; "Amplidyne" or "Tototrol" application of electric power, and production potential of over half a million yards per month.

One of the earliest uses of the 191-M will be as a working companion for new, large truck haulage units in the 50-ton class. There has been a definite trend for several years toward larger trucks in several industries, and the Marion 191-M has capacity to load them in 3 or 4 passes.

Company officials said the 191-M will challenge the thinking of every man whose business calls for digging or loading big yardages, particularly under adverse digging conditions. They feel the development of the 191-M is perhaps the most significant single shovel industry development in nearly a decade.

Most interest in the new machine is expected to come from industries such as mining, quarrying, heavy construction and coal where the hardest, toughest materials must be excavated on a continuous, high yardage schedule to meet demands for constantly growing production.

The Marion 191-M is basically a full electric machine with Ward-Leonard controls. It is equipped with "Amplidyne" or "Rototrol" high speed electrical controls to permit operating speeds that would otherwise be impractical in such large, heavy assemblies. High voltage line current is converted into direct current for powering the operating motors. Separate motors and generators operate the hoist, crowd and swing motions, and there is an "exciter" for each generator combination to make the motors immediately responsive to the operator's controls.

For use in areas where electric power

Above—Marion's new 10-cubic yard machine, the 191-M, was designed to meet the needs of the trend toward larger haulage units. It is teamed up here with one of the biggest truck units, a 50-ton Euclid rear dump, which it loads in four passes.

Below—Left, shop view of the 191-M's ten-cubic yard dipper. Right, the crawler side frames are made of welded steel and are equipped with "built in" integral gear cases.

is not available, the 191-M will be furnished as an all diesel-electric machine, with diesel engines driving the DC generators. The first of the 191-M machines is diesel-electric.

The lower frame of the 191-M is formed of heavy steel plate welded into a deep bulkhead structure for strength and rigidity. The crawler side frames are attached to the frame structure by means of bolts and heavy key-type doweled joints. The propel mechanism is fully enclosed and is hydraulically controlled to eliminate the need for electrical assemblies in the lower frame.

The upper frame is a deep, welded structure with machinery supports welded integral with the frame. Two matching 187½ H.P. 600 line motors, with blowers, operate the hoist machinery and, through the use of clutches, drive the propel mechanism. Twin swing motors of 62½ H.P. are also equipped with blowers. Another 62½ H.P. motor mounted on the boom provides power for crowding and crowd retract.

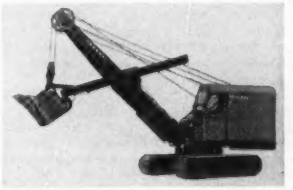
The 191-M has a working weight of approximately 710,000 lbs.

Three-Quarter-Yard Excavator Announced by General

The General Excavator Company announces, after months of on-the-job testing, the newest addition to its line, the Model 320, a three-fourths cubic yard excavator and material handler, which is now in production at Marion, Ohio.

General's advance design and engineering have been put into the Model 320 to produce a compact sturdy machine, which is economical to operate, simple to maintain, and safer to use.

The crawler base, machinery side frames and the deck, are made of castings and rolled structural steel shapes, used separately or in combination to obtain the maximum advantage of each type of material and construction. Machinery mounted on the superstructure is placed well back on the deck, thus giving an unusual stability and increased



Model 320, three-quarter yard General Excavator and Material Handler.

lifting capacity, with a minimum amount of dead counterweight necessary. Ground bearing pressures are low.

The Model 320 is fully convertible to

(Continued on page 42)

Equipment . . .

Three-Quarter Yard Excavator Announced by General

(Continued from page 41)

shovel, clamshell, crane, pile driver, dragline, and hoe work, in the field with a minimum of effort. The standard shovel boom length is 18 feet, 8 inches, with a dipper handle of 15 feet, 3 inches, effective length. Standard crane boom length is 35 feet. Standard length of crawler is 11 feet, 4 inches, with 20, 25 or 30-inch treads available.

This is a manually controlled machine. Twin Disc clutches are used for swing and travel motions, for raising and lowering the boom and for shovel retract. Contracting band clutches are used on the hoist drums. Independent travel is optional.

Special attention has been given in design to present a smooth and quiet running machine, with safety a prime factor. The reversing gears on the swing shaft, and the deck gears, are enclosed and run in oil. Anti-friction bearings are used on all continuously running shafts. The boom hoist is provided with a spring-set, cam-released band brake, which is automatically set when the clutches are disengaged.

Boom hoist is the worm and worm wheel type, carried on anti-friction bearings. Automatic safety brake, mentioned above, adds to safety in holding boom. The boom is raised and lowered under power, using the clutch on the countershaft for raising and a separate clutch for lowering. On all other operations except with shovel front end, the boom hoist is entirely independent of other motions.

The cab of the Model 320 was designed for easy access to the machinery, and to give the operator plenty of room. All controls are grouped within easy reach and he has full view of his work.

Bulletin Describes A. C. Steam Turbine Generator

Design and construction features of Allis-Chalmers WA-Series steam turbine generator units manufactured in NEMA ratings of 2,000 to 7,500 kw are described in a new bulletin released by the company.

According to the bulletin, the WA-Series design is based on proven construction features accumulated in 50 years of turbine-generator design and development. The WA-Series units are built in the condensing type, for power generation only, and in the non-condensing and automatic extraction types to provide a steam-power balance where process steam is used.

Cross section views of each of the turbine types are shown as well as cross sections of the steam turbine generator unit, of the construction of governing valves and operating mechanism, and a cut-away view of WA-Series housing type generator showing spiral air flow in the stator.

WA-Series turbine-generator units are compact, three-bearing, solidly coupled units. Two of the three self-aligning bearings are in the turbine and one is in a bracket on the outboard end of the generator. All bearings are lubricated and cooled by oil supplied by a unit system through accessible piping located above the floor and within the unit.

Copies of the bulletin, "WA-Series Steam Turbine Generator Units," 03B7654, are available upon request from Allis-Chalmers Manufacturing Company, 1083 S. 70th Street, Milwaukee, Wisc.

Larger Struck Capacity In New "Cat" Scraper

With over 40 percent more struck capacity than previous models, the new "Cat" No. 90 scraper is designed to increase earthmoving production when used with D8 tractor power.

Struck capacity of 21.2 cubic yards can be increased to 25.5 cubic yards with the addition of top extensions or sideboards. Likewise, heaped capacity is 27 cubic yards, or 31 cubic yards with the available sideboards.

New No. 90 Caterpillar Scraper

This "Cat" scraper moves dirt with the aid of a hard surfaced, reversible cutting edge. Material is carried in a flat, double-bottom bowl of high tensile steel. Operation is by means of a "Cat" cable control unit, which can be mounted on the rear of the tractor to provide for positive loading and ejection.

Tapered roller bearings are installed at each axle. The scraper uses two 24.00-29 front tires and two 27.00-33 rear tires, all four of 24-ply rating. When loaded, the scraper distributes 60 percent of the weight on the rear tires.

"Caterpillar" is building the No. 90 Scraper at its new earthmoving equipment plant in Joliet, Ill. Shipping weight of the unit is 35,100 pounds. Additional information can be supplied by "Caterpillar" dealers or by Caterpillar Tractor Co., Peoria, Ill.

American Steel, Wire Names Roger Berrett

Roger W. Berrett has been appointed to the post of purchasing agent for American Steel & Wire Co., succeeding Frank E. Chesney, who has retired, it has been announced by Harvey B. Jordan, president of this United States Steel subsidiary.

Mr. Berrett was born in Everett, Mass. He attended public schools in Worcester, and was graduated from Northwestern University in 1929 with a degree in commercial science. He attended the Advanced Management Program of the Harvard Business School in the Fall of 1950.

He first joined the Wire Company in 1926 as a clerk in the mechanical department at Worcester North Works. After completing his university education he was made a rod schedule clerk at North Works.

Following a series of promotions he was transferred to the purchasing department at the company's Cleveland offices in 1937. Three years later he was appointed a buyer and in 1945 was named assistant district purchasing agent. Later that year he was promoted to assistant to purchasing agent. In 1946 he became assistant purchasing agent and in April 1951, was named senior assistant purchasing agent, a position he has held since that time.

Mr. Berrett is a member of the Cleveland Chamber of Commerce, Cleveland Purchasing Agents Association, the Lakewood Country Club, the Lakewood Little Theatre, and the Harvard Alumni Association.

Timmis Appointed Manager For Dravo Corporation

William W. Timmis, Jr., has been appointed as southern sales and service manager for Dravo Corporation's heating department. Mr. Timmis will maintain headquarters at 800 Peachtree Street, N. E., Atlanta, from which he will direct the sale of the Dravo "Counterflo" heater and the Dravo crane cab cooler.

Mr. Timmis is a resident of Atlanta and is well known to the building trades and architectural groups. He is active on the Atlanta executive council for the Boy Scouts of America; member of the Board of Directors at the Commissioned Officers' Club, Naval Air Station, Atlanta; Commodore of the Atlanta Yacht Club; member of the Dixie Camera Club; and member of Phi Delta Theta Fraternity.

Diesel Engine Booklet Reprinted by G. M.

A booklet entitled "What Do GM Diesels Do?" which describes the many uses diesel engines fulfill in our modern economy has just been reprinted by Detroit Diesel Engine Division of General Motors.

This entertaining and instructive booklet is written in rhyme and is illustrated by drawings of locomotives, busses, boats, power shovels, saw mills and many other pieces of essential equipment that are today commonly powered by Diesel engines.

Copies are available to individuals or as an educational piece for schools, libraries, reception rooms, etc., from Detroit Diesel distributors and dealers or direct from Detroit Diesel Engine Division, General Motors Corp., Detroit 28, Mich.

Harnischfeger Advertises on Shipping Containers

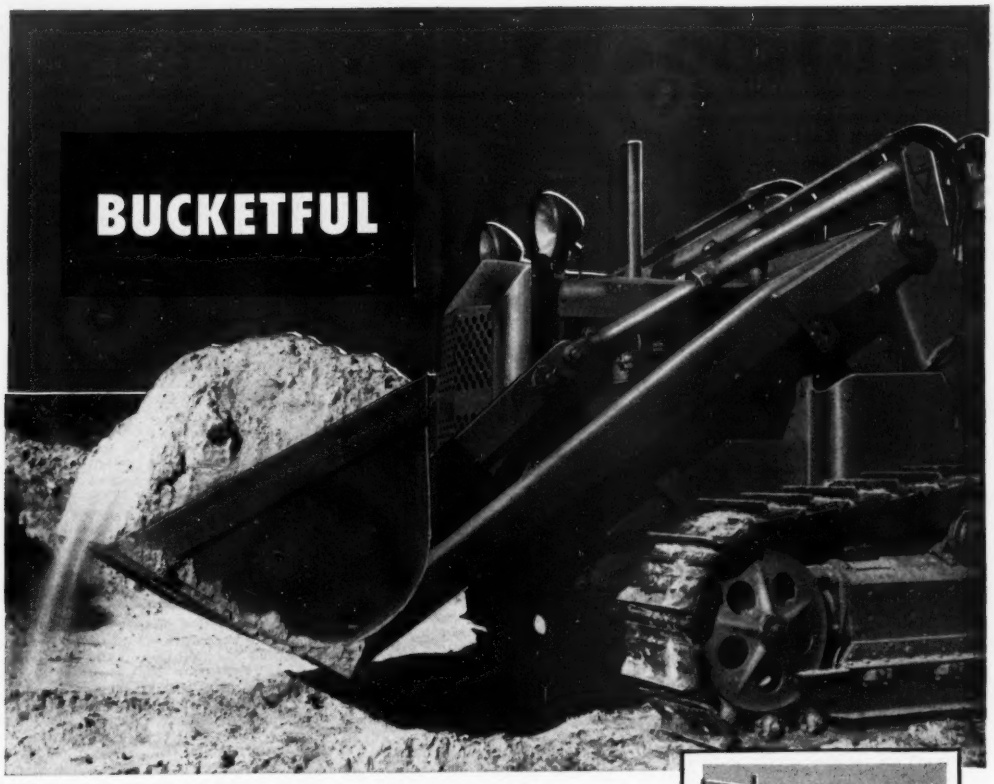
Use of the shipping container for advertising has paid off in improved public relations to the P. & H. Harnischfeger Corp. of Milwaukee, manufacturers of electric hoists, earth-moving machinery, and heavy foundry products.

This use of shipping containers to assist merchandising of spare parts and the company's electric "Zip-Lift" hoist is an added dividend of unexpected importance from the company's reorganization early in 1950 of its method of packing hoists and repair parts for shipment.

Previously, it made its own shipping containers for "Zip-Lift" hoists and bought completely assembled boxes for the parts.

Early in 1950, however, the company converted to the use of two sizes of wirebound boxes for hoists and nine sizes of wirebound boxes for repair parts. G. A. Schmus, the alert traffic manager of the company, instantly saw the advertising possibilities presented by the newly

(Continued on page 44)



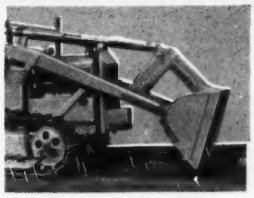
# of Cost-Cutting Features

When it comes to cutting loading costs... stepping up profits, the Oliver Model "B" Crawler and Ware Loader is "loaded" with *plus* features.

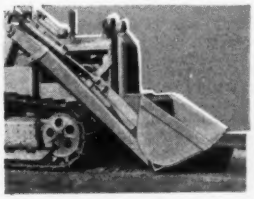
Take the hydraulically controlled bucket, for example. 110° bucket rotation and 28° "tilt back" give you a full bucket every time. "Breaking out" action is 3 times the lifting effort of the loader... a particularly important advantage when loading out hard-packed material or for stripping operations. Bucket level is automatically maintained when lifting load, preventing wasteful spillage. You can control speed of discharge... fast or slow, easily and gently. And, even with the "tilt back" action, you still have a 32° (from vertical) dump angle... a control range no other loader can match. You get bigger loads... *faster!*

The Oliver-Ware "B" loader was designed and built exclusively for Oliver Model "B" tractors. Its ideal fit with the tractor eliminates unneeded dead weight and assures maximum stability for the entire unit. The Oliver semi-rigid axle allows limited oscillation of the track, eliminating the possibility of track-frame distortion. A hydraulic shock absorber smooths out pressure surges... prevents damage to loader and tractor parts.

For complete information on how the Oliver-Ware Model "B" tractor loader can cut costs for you, see or write your Oliver Industrial Distributor.



Plenty of power, plus the wide angle of bucket rotation, assures faster, more positive digging. 28° "roll back" assures maximum break-out action for a full bucket every time.



THE OLIVER CORPORATION

Industrial Division: 19300 Euclid Avenue, Cleveland 17, Ohio

A complete line of industrial wheel and crawler tractors

Equipment . . .

Harnischfeger Advertises on Shipping Containers

(Continued from page 42)

adopted containers.

The identifying P. & H.. Harnischfeger Corp. trademark for the hoists is boldly printed in bright blue on two sides of the boxes used for hoists along with the

eye-catching legend, "Another Zip-Lift Hoist," plus the company's name and address.

Boxes packed with repair parts are printed on two sides with "Genuine Repair Parts—Quality & Service," plus the company's name and address.

The company's name and return address, of course, also are printed on top of every box. Thus the Harnischfeger Corp. and its products are advertised on the top, the front, and the back of every wirebound box carrying a hoist or repair parts.

Mr. Schmus says, "since we have been printing our advertising on the boxes, however, the reaction of dealers has been most enthusiastic. Scores have told us how it helps them merchandise genuine Harnischfeger Corporation genuine spare parts for our machines."

Doctor Mathesius Joins Koppers Company

Dr. Walther Mathesius, retired president of Geneva Steel Co. has become a consultant for the Freyn Engineering department of Koppers Co., Inc.

Joseph Becker, vice president and general manager of Koppers engineering and construction division, said that Dr. Mathesius, who is generally recognized in the steel industry as being instrumental in the successful development of modern blast furnace practices, will move to Chicago to be connected with headquarters of Freyn there.

Koppers Freyn Department is engaged in designing and constructing blast furnaces, open hearth furnaces, sintering plants, rolling mills and other steel plant facilities.

Allis-Chalmers Announces Compact Voltage Regulator

A more compact version of its "Rocking Contact" voltage regulator for small a.c. generators has been announced by Allis-Chalmers Manufacturing Co., Milwaukee, Wisc.

The latest unit is available in two ratings, one with a 34-step commutator (Type V-00) and the other with 50 steps (Type 221). The former has a maximum rating of 157 kva at 3600 rpm and the latter a maximum of 438 kva at 3600 rpm.

The regulator's "Rocking Contact" design does away with vibrating or sliding contacts. It is in motion only when change in excitation is required. Hunting is prevented by an elastically coupled damping system.

New Advertising Manager At Gardner-Denver Company

Carson L. Ruyle has been appointed advertising manager of the Gardner-Denver Co., Quincy, Ill. He assumes the position formerly occupied by Lt. Damon P. Tunnicliff, who has been called to active service in the Navy and who is assigned to the Destroyer U.S.S. Power for duty in the Newport, Rhode Island area. He has capably filled the position of advertising manager of Gardner-Denver for the past five years.

Mr. Ruyle joined the Gardner-Denver Company in 1930, serving in various capacities in the company's engineering and accounting departments. After a brief absence from the company, he rejoined it in 1941 and since then has been a member of the sales division at the Quincy office. His work with the company has given him a thorough knowledge of products features and sales procedures.

Allis-Chalmers Bulletin On General Purpose Pumps

Construction details on Allis-Chalmers grease-lubricated pedestal-mounted general purpose pumps (Type SSB) are given in a new bulletin released by the company.

The pumps, available in capacities to 2500 gallons per minute at heads to 550 feet, can be had with stuffing box or mechanical seal, direct coupling or V-belt drive, and in a choice of materials.

One of the many combinations of materials and seals possible with this pump will handle almost any liquid at temperatures to 250°F. Pedestals recommended for use in normal temperatures are equipped with grease-lubricated Fafnir Mechani-Seal, single-row, wide, inner ring bearings, while those suitable for operation in atmospheres where acid or alkali vapors or fumes, or abrasive dust is encountered are equipped with grease-lubricated ball bearings and cast iron end caps.

Copies of the bulletin, "Allis-Chalmers Type SSB General Purpose Pumps," 52B6351B, are available upon request from Allis-Chalmers Manufacturing Company, 1188 S. 70th Street, Milwaukee, Wisc.

New Telsmith Line

Smith Engineering Works, of Milwaukee, Wisc. announces a new line of Telsmith portable primary crushers in a new Bulletin, No. 277. This new type plant is offered in three sizes and the 25 by 36 size is illustrated.

These new Telsmith Portable Primary Crushers consist of a heavy steel receiving hopper with special duty apron type feeder, heavy duty roller bearing all steel Jaw Crusher with cast steel frame and swinging jaw, steel operators platform with controls, delivery conveyor, etc.

U. S. Steel Continues Corporate Changes

Further steps in the program of simplifying the corporate structure of United States Steel begun a year ago were announced last month by Irving S. Olds, Chairman of the Board.

"It is intended," Mr. Olds said, "that as soon as practicable United States Steel Corporation will become primarily an operating corporation with its present activities relating to mining and steel production, fabrication and distribution conducted by general operating divisions. Mr. Benjamin F. Fairless is President of United States Steel Corporation which owns all of the stock of the several subsidiaries which now conduct such operations.

"On January 1, 1952, as the next step in this direction, these wholly owned subsidiaries will become general operating divisions of United States Steel Company, the major subsidiary involved. Mr. Fairless is also President of United States Steel Company.

"The names of most of these new operating divisions will correspond with those of the present subsidiaries involved in this reorganization. The present head of each subsidiary will continue in most instances in a similar capacity with the new general operating division, with the title of president of such division, and with his headquarters continuing at its present location.

"The completion of this further effort to attain corporate simplification will constitute another step in the continual process of keeping United States Steel as up to date as possible in all phases of its organization and operations. Such a step tends to reduce costs, facilitate and improve production, and should result in eventual benefit to stockholders, employees, customers and the public generally. Such results should also be of distinct help to successful conclusion of the existing national defense program.

"This reorganization, which is entirely internal in character among 100 per cent owned subsidiaries, will neither affect present customer relationships, nor change the present stock interests of the stockholders of United States Steel Corporation, nor will it change in any way the friendly relations which United States Steel has so strongly fostered through the years in the communities in which it operates. On the contrary, increasing emphasis will be placed upon the maintenance of close and co-operative community relationships as a vital part of United States Steel policies."

Pollution Research Booklet

An 8-page booklet titled "Research in Air and Water Pollution" is available gratis from Vern W. Palen, Bureau of Public Information, New York University College of Engineering, New York 53, N. Y.

The new publication describes the work and facilities of the Air and Water Pollution Research Section of the Research Division and is illustrated with photos showing wind tunnel tests, balloon high-altitude experiments, radioactive laboratory, air sampling, and health and safety techniques.

Text material is divided into sections and some of the subjects covered are: Effects of Pollution, Industrial Waste Utilization, Meterology and Aerodynamics, Sanitary Engineering and Sanitary Chemistry, and Industrial Medicine.

Southern Construction Projects

(Typical and Important Reports Excerpted from Daily Construction Bulletin)

SOUTH CAROLINA

(Continued from page 31)

AUGUSTA—City received low bid of $674,994 from G. E. Moore Co., Greenwood, for water improvements.

CHARLESTON—Public Housing Administration approves $6,000,000 low-cost housing, 500 units.

CHARLESTON—Charleston County Council received low bid from Skinner & Ruddock, P. O. Box 750, Charleston, at $986,000 for tuberculosis hospital.

GREENVILLE—U. S. Corps of Engineers received low bid of $677,801 from Dickerson, Inc., Monroe, N. C., for asphalt flex. paving, and $881,088 from the Ballenger Paving Co., for concrete paving.

GREENVILLE — Corps of Engineers, Charleston, received low bid of $683,541 from Dickerson, Inc., Monroe, N. C., for extension and addition to East-West parking apron, Donaldson Air Force Base.

LAURENS — Housing Authority received low bid of $810,918 from Bailey-Brazell Construction Co., Greenville, S. C., for low rent housing projects.

NORTH AUGUSTA—City received low bid of $648,446 from C. Y. Thomason Co., Greenwood, for water improvements.

SHAW AIR FORCE BASE — Kahn Construction Co. received award for $4,000,000 Wherry housing project, 500 units.

UNION — Lyles Ford Tri-County Power Authority plans hydroelectric project on Broad and Congree Rivers in South Carolina to construct three dams, two across Broad River, and a regulating dam on Congaree River, $113,000,000.

SUMTER—Corps of Engineers, Charleston, let contract to Gilbert Engineering Co., 638 S. Meeting, Statesville, N. C., at $344,827, for extension of runway and construction of new taxiway, Shaw Air Force Base.

TENNESSEE

Bureau of Public Roads allocated $4,711,574 for highways.

CHATTANOOGA—E.N.&W.N.C. has plans in progress for freight terminal.

CHATTANOOGA — City Commission authorized the issue of $500,000 in bonds to finance part of the cost of bridge across Tennessee River.

ELIZABETHTON—City Council approved issuance of $20,000,000 bond issue for paper mill near Elizabethton; Monadnock Paper Mills, Inc., New York, N. Y., paper mill, cost $30,000,000.

KNOXVILLE — Corps of Engineers received low bid of $395,156 from Harrison Construction Co., Maryville, for utilities, sidewalks, roads, drainage, etc., McGhee-Tyson Air Base.

KNOXVILLE—Atlantic Ice Co. plans addition.

KNOXVILLE—Southern Bell Telephone & Telegraph Co. plans $640,200 program.

LAFAYETTE — North Central Telephone Cooperative Corp. has REA loan of $1,357,000 for telephone work.

MILLINGTON — Board of Education let contract to L & M Construction Co., 843 Vance, Memphis, for addition at Millington High School.

NASHVILLE—Pepsi-Cola Bottling Co. has building permit for new $100,000 bottling plant.

TULLAHOMA—Corps of Engineers let contract to Blount Brothers Construction Co., P. O. Box 1144, Montgomery, Ala., at $707,212, for motor building and outside crane runway, Arnold Engineering Development Center.

TEXAS

The Brazos River Conservation & Reclamation District have plans in progress for constructing dams at Turkey Creek & Inspiration Point, near Mineral Wells, and at DeCordova Bend, near Granbury.

Federated Department Stores plans $20,000,000 building program in key medium-sized cities; stores planned at Wichita Falls; multi-million dollar department store, planned at N.W. corner of Eighth and Tyler, Amarillo, Tex.

Bureau of Public Roads allocated $29,681,979 for highways.

Magnolia Petroleum Company, subsidiary of Socony-Vacuum Oil Company, let contract to Hudson Engineering Corp., Houston, for new gasoline plant about 30 miles southwest of Midland.

AMARILLO—Texas Company plans addition to refinery, $20,000,000.

BAYTOWN—City plans sewers and water improvements, $2,005,000.

BEAUMONT—Housing Authority plans 200 unit housing project, $2,000,000.

BRENHAM—Sisters of St. Francis (Sylvania, Ohio), plan hospital, $600,000.

BRYAN—Sisters of St. Francis (Sylvania, Ohio), Brenham, plan hospital, $900,000.

CLARKWOOD — Celanese Corporation of America received low bid of $371,000 from E. Eisenhauer, Corpus Christi, for office and laboratory building.

COLORADO CITY—Gulf refining Company plans electric work on crude oil pipe line from Colorado City to Lucas; $1,035,000.

CORPUS CHRISTI—Taylor Refining Co. plans refinery, $3,000,000.

FORT WORTH—Forty Oaks Center, Inc., plans shopping center, $400,000.

FORT WORTH—City plans extension of N. E. 12th St., $1,000,000.

GALVESTON—Joseph Rady, 811 Insurance Bldg., Fort Worth, Consit. Engr., has preliminary plans for proposed sewage disposal plant, $2,500,000.

GRAHAM — Brazos River Conservation & Reclamation District, has $75,000 for advance planning of the construction of Morris Shephard Dam, $8,300,000.

GRAPEVINE—Corps of Engineers plans completion of Grapevine Dam Project and relocation.

HARLANDALE — Harlandale Independent School District, W. H. Spivey, Pres., let contract at $876,899, to Gilbert Faibo Co., San Antonio, for high school.

HOUSTON — Harris County Fresh Water Supply District No. 23 let contracts for water and sewer facilities as follows: Century Construction Co., 6400 Liberty Road, on Contract No. 1 at $279,861; Layne-Texas Co., 5402 Lawndale, on Contract No. 2 at $25,559; Chicago Bridge & Iron Works, 5623 Clinton Dr., on Contract 3, at $25,880; land Contract 4 at $8,895; English Construction Co., P. O. Box 497, Galena Park, $181,820 on Contract 5; A. C. Koehler, P. O. Box 6235, on Contract 6 at $84,402.

HOUSTON—Houston Pipe Line Co., subsidiary of Houston Oil Co., plans expansion of natural gas pipeline facilities, cost $10,000,000.

HOUSTON — City plans water treatment plant, $4,000,000.

HOUSTON—O-T-M Supply Co., negotiated contract with W. S. Bellows Construction Co. for office building and warehouse buildings, $1,000,000.

HOUSTON — Peter Pan Baking Co., Omaha, Nebr., plans bakery, Griggs Road, $2,750,000.

HOUSTON—Lakeside Country Club plans 750-acre country club, $1,000,000.

HOUSTON — Oak Meadows Corp. plans shopping center, $1,000,000.

KILGORE — City plans water improvements, $1,200,000.

LAKE JACKSON—King & Sheets, Houston, construct 120 dwellings, $1,000,000.

LAREDO—U. S. Corps of Engineers, Galveston, will reactivate Laredo Municipal Airport for a jet pilot training center, $8,577,000.

PASADENA — Pasadena Independent School District let contract at $1,124,161 to Robert E. Nesmith Co., Houston, for junior high school.

PORT ARTHUR—Port Arthur Independent School District let contract at $686,000 to Schneider Construction Co., for Park Place Elementary School.

PORT ARTHUR—St. Mary's Hospital has $900,000 federal aid grant for addition to hospital, $2,500,000.

PORT LAVACA—Aluminum Company of America plans 100-home project, $1,000,000.

ROCKDALE—William A. Smith Construction Co., 301 Gregg St., Houston, has contract for preparing railroad trackage on site of aluminum smelting plant being built by Aluminum Company of America, Pittsburgh, Pa., $100,000,000.

SAN ANTONIO — Santa Rosa Hospital, Sister Mary of Lourdes, Supt., plans addition, $2,000,000.

SAN ANTONIO—City Public Service Board plans power station Unit No. 4, near Short's corner on Salado Creek, south of Nacogdoches Rd., $8,000,000.

TEXARKANA—Corps of Engineers, Tulsa, Okla., let contract to T. C. Bateson Construction Co., Dallas, at $623,970 for additional facilities, Area 1, Lone Star Ordnance Plant.

TEXAS CITY — Pan American Refining Corporation let contract to Texas Gulf Construction Co., at $1,000,000 for office, laboratory.

WICHITA FALLS — Corps of Engineers, Tulsa, Okla., received low bid from T. C. Bateson Construction Co., Dallas, at $1,211,700, for design, fabrication and erection of maintenance and operations facilities, Sheppard Air Force Base.

VIRGINIA

Three flood control dams planned; Gathright and Falling Spring reservoirs on Jackson River in James River basin near Covington; Salem Church reservoir on Rappahannock River about five miles upstream from Fredericksburg; Moore's Ferry reservoir on Rappahannock River.

Among coal mining projects authorized by Defense Solid Fuels Administration are: Western-Knapp Engineering Co., Dorchester, Tipple, $223,457; Blackwood Fuel Co., Inc., Pardee, shop building, $20,200; Laurel Creek Coal Co., Conway, Tipple, $35,000.

Bureau of Public Roads allocated $9,353,321 for highways.

ARLINGTON—Arlington County approved $1,382,000 bond issue for storm sewers; $1,318,000 for highways and sidewalks.

BUGGS ISLAND—U. S. Corps of Engineers, Norfolk, received low bid of $2,143,855 from Wiley N. Jackson Co., Inc., Roanoke, for relocation of Highway 58.

CHINCOTEAGUE — Navy Department, Norfolk, let contract at $273,528 to Ferguson Corp., Hampton, for jet aviation fuel storage, Auxiliary Air Station.

CHARLOTTESVILLE—University of Virginia let contract at $106,442, to John W. Daniel & Co., Danville, for naval armory.

CHESTERFIELD COUNTY—City received low bids for covering water filtration plant and Falling Creek Dam; filter plant, Thorington Construction Co., Richmond, $128,760; dam, Thorington Construction Co., Richmond, $50,912; filters, Roberts Filter Mfg. Co., Darby, Penn., $30,280; and pumps, Russell R. MacDonald, Richmond, $11,681.

CHESTERFIELD COUNTY — Corps of Engineers let contract to Wise Contracting Co., Richmond at $2,202,200, for three warehouses, Richmond Quartermaster Depot.

ELIZABETH CITY COUNTY — Board of Education received low bid of $767,740 from Mottley Construction Co., Farmville, for Negro junior high school.

LEBANON — Lebanon Methodist Church congregation plans building, $100,000.

NEWPORT NEWS—Newport News Redevelopment and Housing Authority plans 750-unit housing project.

NORFOLK — Navy Department, Public Works Office, received low bid of $1,694,631 from Carpenter Construction Co., Norfolk, for additions to aviation gasoline distribution system, Craney Island.

NORFOLK — Virginia Electric & Power plans $40,000,000 expansion program in 1952.

NORFOLK — Regie Nationale Des Usines Renault, James C. Touchton, may establish plant for production of small, rear-engine car.

NORFOLK COUNTY—Board of Education let contract to W. T. Gregory Construction Co., Norfolk, at $258,000 for addition to Norfolk Highlands School.

PORTSMOUTH — Navy Department received low bid from Whitlock-Dunn, Portsmouth at $289,758, for repairs to shop No. 163.

QUANTICO — Navy Department, let contract at $169,294 to American Asphalt Products, Washington, D. C., for road repairs.

RICHMOND — Richmond Produce Market Authority announced plans for $1,400,000 wholesale produce marketing center in Shockoe Valley.

RICHMOND — Public Buildings Service, General Services Administration, Washington, D. C., let contract at $187,438, to Blake Construction Co., for miscellaneous repairs, post office and court house.

RICHMOND—Board of Education let contract at $492,000 to A. H. Ewing's Sons, for George Mason Elementary School.

SUFFOLK—Main Street Methodist Church Congregation let contract to Reed & Hope, at $152,997, for educational building.

WARRENTON — Corps of Engineers received low bid from F. H. Martell Co., 1023 20th St., N.W., Washington, D. C., at $156,600, for warehouses, Vint Hill Station.

(Continued on page 57)

A.E.D. Meet Prospects Pass All Records

Registrations for the 33rd Annual Meeting of Associated Equipment Distributors, schedules to be held at the Stevens Hotel (recently renamed The Conrad Hilton Hotel) in Chicago, January 27 through 31, have already passed the record-breaking total of last year's convention, according to S. F. Laskey, chairman of the 1952 Convention Committee.

With the annual meeting more than two months away, nearly 1800 advance registrations have been received by the executive offices, Mr. Laskey said. This figure includes representatives from 223 manufacturer members and 426 distributor members of the association.

Among the speakers already scheduled for the meeting will be Rear Admiral Ellis M. Zacharias, U.S.N. (retired), author of the best-sellers, "Secret Mission" and "Behind Closed Doors." Admiral Zacharias, who will be the featured speaker at the farewell luncheon on Thursday, Januray 31, is rated as one of the most informative public speakers in the country. The four day program will also feature several top speakers from both government and industry.

Part of the Monday afternoon session will be devoted to a sales executives clinic, conducted by Millard Bennett and John D. Corrigan, nationally recognized business economists. Bennett's keynote talk is entitled "The Three Golden Keys—to open the doors to success in selling." Corrigan's talk is entitled "The Sales Executives Hottest Problem."

Other highlights of the four day meeting include the "Meet Your Manufacturers" session on Tuesday morning, a governmental problems meeting on Wednesday morning, and a manufacturer-distributor problems session on Thursday morning. The 1952 Convention Committee has announced several top government executives have been scheduled for the Wednesday program.

Tuesday and Wednesday afternoons, the committee said, have been left open to permit sufficient manufacturer-distributor contracts.

The traditional Early Birds Breakfast, honoring AED National President R. L. Arnold, will open the social program Monday morning, January 28. The breakfast will be given by distributors from AED Region 14, covering the states of Utah, Wyoming, Colorado and New Mexico. President Arnold will serve as host at the President's Cocktail Party Monday evening.

The AED Annual Banquet will be held at the Stevens Tuesday evening. The installation of Officers luncheon is scheduled for Wednesday, and the Farewell Luncheon for Thursday.

Serving with chairman S. F. Laskey, Northwestern Equipment Co., Fargo, N. Dak., on the 1952 Convention Committee are F. J. Fitzpatrick, Parker-Danner Co., Hyde Park, Mass.; H. J. Hush, Griffin Equipment Corp., New York, N. Y.; W. W. Kershaw, Wheeler-Kershaw Co., Salt Lake City, Utah; S. J. Oechsle, Metalweld, Inc., Philadelphia, Pa.; and W. A. Patterson, Richards Equipment Co., Waco, Texas.

Gross Heads San Antonio Engineer Sub-Office

Lt. Col. Leslie M. Gross, Corps of Engineers, who recently returned to the United States from Korea, has been named officer-in-charge of the San Antonio sub-office of the Galveston District, it has been announced by Col. Jas. D. Lang, District Engineer.

Lt. Col. Gross

For the past several weeks, Colonel Gross has been acquainting himself with mission and operations of the Galveston District, prior to assuming his newly assigned position.

In 1941, Colonel Gross was assigned to the Third Infantry Division as Division Engineer and Commanding Officer of the 10th Engineer Combat Battalion until his recent rotation from Korea.

This will be his second tour of duty in the San Antonio area, having previously spent a year in an administrative capacity with the Air Force at Lackland Air Force Base.

Colonel Gross is a 1934 graduate of the University of Kentucky. Prior to being called to active duty in July 1941, he was employed as a civil engineer in Kentucky.

In 1946, Colonel Gross was assigned to the Corps of Engineers and served in Panama until his assignment to Korea.

Colonel Gross is married to the former Mary Preston Crews of Charlottesville, Va. They have one son, age nine.

Pennsalt to Add Unit at Calvert City Plant

Beginning the second major step in the development of its Calvert City, Ky., works, the Pennsylvania Salt Manufacturing Co. has announced it will add new facilities, including an electrolytic chlorine-caustic soda unit, at an estimated cost of $8,000,000.

As the first step, Pennsalt completed a hydrofluoric acid and sulfuric acid plant in 1949 on its Tennessee River location near Tennessee Valley Authority's Kentucky dam. These facilities have been expanded by the addition, in 1950, of a unit to produce end products from captive hydrofluoric acid and, now nearing completion, a 33 per cent increase in hydrofluoric acid capacity.

Addition of the new unit will combine at one works four basic chemicals—hydrofluoric acid, sulfuric acid, chlorine and caustic soda, the first combination of these four products in one works in the United States.

In the development of Calvert City as an integrated center of chemical industry, it was pointed out that the Air Reduction Co. is building a calcium carbide and acetylene plant in the same area. Availability of such basic chemicals in combination will probably attract further chemical production to the area. The B. F. Goodrich Chemical Co. also has announced plans to build a vinyl chloride plant on property adjacent to that of both Pennsalt and Air Reduction.

A departure in the new unit from Pennsalt's usual chlorine-caustic soda production will be the use of the DeNora electrolytic mercury cell. In Pennsalt's other chlorine-caustic soda operations—at Wyandotte, Mich.; Portland, Ore., and Tacoma, Wash.—the modified Gibbs diaphragm cell is used. The DeNora cell, developed in Italy, produces caustic soda of rayon-grade purity at concentrations up to 72 per cent. Power for electrolytic processes and plant operations will be supplied by TVA.

In addition to production of chlorine and caustic soda, the new unit will also include facilities for producing anhydrous hydrochloric acid, and additional facilities designed for further expansion, since the new plant will make the Calvert City works another area for economical production of Pennsalt specialties using chlorine and caustic soda.

Engineer-contractors for the new unit will be the Leonard Construction Co. of Chicago. Preliminary work has already started and it is expected that the new plant will go into operation in early 1953.

More Turnpike Mileage Opened to Traffic

The New Jersey Turnpike Authority opened 40 additional miles of its superhighway from Bordentown to the Woodbridge-Amboys interchange (Route 35) November 30. Paul L. Troast, chairman of the Authority, said "this section, together with the 53 miles which were opened on November 5 to traffic from the Delaware Memorial Bridge to Bordentown, making a total of 93 miles, will be available for the use of motorists and truckers.

"We had hoped, in addition, to open the 16 miles between the Woodbridge-Amboys interchange at Route 35 and the Raymond Boulevard interchange in Newark. However, the three Commissioners of the Authority are not satisfied with the status of the guard rails, concrete curbing and other necessary safety devices in the Elizabeth area, the work having been delayed by recent freezing temperatures and extraordinary rainfall.

"In opening the 93-mile stretch southward from Route 35, the Turnpike will offer quick and safe travel to football fans planning to attend the prominent games in Philadelphia. The new points of entrance to the Turnpike available for travelers from the north are the Woodbridge-Amboys interchange on Route 35 in Woodbridge, the Garden State Parkway interchange in Woodbridge, the New Brunswick interchange on Route S-28 in East Brunswick and the Hightstown-Trenton interchange on Route 33 in Hightstown.

"The final nine-mile section of the Turnpike from Newark to the George Washington Bridge interchange will be opened to traffic on January 15, next."

Merry Christmas and a
Happy New Year
HERMITAGE
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Engineers Create Unit for Overseas Work

Establishment of the East Ocean Division to supervise off-shore military construction assigned to the Corps of Engineers has been announced by Lt. Gen. Lewis A. Pick, Army Chief of Engineers.

Headquarters of the new division will be in Richmond, Va., at 800-802 E. Broad Street.

Effective November 15, 1951, four off-shore military construction districts and an engineer group, heretofore under the North Atlantic Division, New York, came under the new division.

General Pick said, "The very large scope of construction involved has made it necessary to place control of the work under a new division devoted solely to the problems of off-shore construction."

Brig. Gen. Robert G. Lovett will be the East Ocean division engineer. Since June 1949 he has been assistant chief of engineers for military supply and procurement at Washington.

Frank T. Sheets Dies

Frank T. Sheets, 61, president of the Portland Cement Association since 1937 and nationally known highway engineer, died suddenly November 3 in Passavant Hospital, Chicago.

Mr. Sheets joined the Association in 1933 as consulting engineer with a background of 12 years as chief highway engineer and superintendent of highways for the state of Illinois. For four years prior to his election as president of the Association, he served as consulting engineer and director of development for the association.

Oklahoma Shows Use of Highway Dollar

Oklahoma state highway commission has turned to a series of education days to show the taxpayer where his dollar goes when it is devoted to road building.

Under the supervision of Mike Donnelly, administrative assistant, Director C. A. Stoldt is organizing public turnouts on major highway improvements nearing paving completion.

Local arrangements are spearheaded by civic organizations who get up the crowds and take them to the scene of the construction and mixing plants.

There the contractor explains the why and wherefores and the mix and then accompanies the crowd to where the paving is laid where more details are explained.

The first of the series was held at Yukon where Dahlgren & Brooks, Oklahoma City contractors, were finishing a 6-mile stretch of 4-lane asphaltic concrete on U.S. Highway 60.

The job, including roadbed, bridges and surfacing, finalled out at a cost of $1,-107,000.

An effort to reach high school students was made by offering $100 cash to the student who named 20 of the most important essentials involved in road building. Teachers said they planned classroom work on the information gained.

Director Stoldt believes that the innovation will correct a lot of false impressions about road construction, particularly on costs, and that the gatherings will thin the ranks of critics and fault-finding citizens.

Baltimore County Opens Bids on Road Projects

Proposals received last month for five Baltimore County, Maryland highway improvements resulted in low bids totaling $82,601. The projects included:

Contract 5153-R, improvement of Wynbrook Road and 51st Street in Northbrook, 15th District, B. & W. Construction Co., $8,829;

Contract 5157-R, improvement of Stevenson Lane, Stanmore Road and Lanark Road in Rodgers Forge, Section 11, 9th District, B. & W. Construction Co., 101 Hamilton Bank Building, $29,650;

Contract 5176-RX, improvement of Lockwood Road in Haywood Heights, 3rd District, Joseph A. Lavezza & Sons, $9,955;

Contract 5187-R, improvement of Cavan Drive and Dublin Drive, in Towsonvale, 9th District, B. & W. Construction Co., $22,750;

Contract 5188-R, improvement of Weston Avenue and Water Oak Road in Ridgeleigh, 9th District, B. & W. Construction Co., $11,417.

Farm-to-Market Roads Approved in Texas

The Texas Highway Commission has announced completion of the study and approval of the majority of farm-to-market roads to be constructed throughout the state from the funds provided by the last session of the Texas legislature.

Chairman E. H. Thornton, Jr., said the Texas farm-to-market road system had its beginning at the close of World War II when the Texas Highway Department embarked on a program of construction of important farm-to-market roads to extend all-weather traffic service into the rural areas of this state.

"Each year, as additional funds have been made available to the Department for this specific purpose, we have been able to extend more and more of these important feeder roads into the rural areas of Texas," he declared.

At the present time the state has added 19,000 miles of these roads which were formerly county roads. The new program will add an additional 2,500 miles of such roads, making a total of 21,500 miles of rural roads that have either been constructed or financed for construction by the State of Texas since the close of World War II.

Chairman Thornton pointed out that the highway commission has approved about 80 per cent of the program and will consider the approval of the remaining 20 per cent at the December meeting.

He said it was necessary to withhold action in approximately 20 per cent of the areas of the state due to the fact that agreements had not been reached in these areas between the county officials and the State Highway officials concerning the roads to be improved from these particular funds.

Where liberty dwells, there is my country. —Benjamin Franklin

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The Indianapolis Speedway. Here is pavement that takes the fastest traffic known—Adnun laid 15 years ago. This is only one example of the many miles of pavement laid up to 17 years ago and still in service. Ask for the booklet, Roads That Last!

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Construction Active at Amarillo

If every man, woman and child in Amarillo were to have to pay his equal share for construction in that Texas city this year, bills of $686 would be sent to every one for his share of the first nine months' construction costs.

The city's 83,000 residents would have to pay a total of $56,939,360.

The pace of construction in Amarillo for the 26 months prior to July, 1951, had never fallen below the million-dollar mark per month, based on the issuance of building permits.

Following a total of $896,442 in July building permits rose to $1,314,644.50 in August and $3,275,821 in September, bringing the 1951 total to $16,972,753.50 for the 3,065 permits issued through September.

Build Over 2,000 Dwellings

There is plenty of good news for personnel of Amarillo Air Force Base and the Pantex AEC installation. Through September a total of 2,032 permits for dwellings had been issued totaling $13,022,576.60.

Because approximately 10 per cent of these permits were for multiple dwellings such as duplexes and apartments, the figure of 2,032 should be adjusted upward by about 200.

Still another bright spot in the housing picture is that additions and alterations to residences during the same period amounted to a total of 665 permits ($734,743).

Many of the additions and alterations were for dividing present structures into apartments, thus creating still more rental units.

New commercial, industrial and business buildings accounted for 161 permits and $1,645,554, with 196 permits ($983,725) issued to remodel or add to this type of structure.

Schools, churches and charitable organizations were issued nine permits totaling $151,500 (including the $40,000 cerebral palsy center); nine permits totaling $443,675 were issued for alterations and additions.

Amarillo Air Force Base

Approximately $30,000,000 have been spent or allocated so far to rehabilitate more than 100 buildings and to build 221 new dormitories and 13 messhalls at the base.

Still more construction is scheduled at the base although no definite figures have been released.

Work is continuing at top speed on all the various projects.

Due to the nature of the super-secret Atomic Energy Installation at Pantex, few details are available to the public. However, so far 11 contracts totaling $5,849,356 have been awarded.

Information as to the number and amount of contracts to be awarded before the installation is completed is not available.

Schools Keeping Abreast

Now in the process of being completed or on the drawing boards of Amarillo architects are two programs totaling $4,117,250 for 15 projects.

Here is an analysis of the schools just completed or still under construction:

Avondale (elementary)—13 rooms and cafeteria, $307,000, 90% complete, Kerr & Kerr, architects;

Lamar (elementary) — 13 rooms and cafeteria, $373,300, complete, R. E. Hucker, architect;

Robert E. Lee (elementary)—13 rooms and cafeteria, $318,500, 90% complete, Walsh and Hazlewood, architects;

Stephen Austin (junior high)—Classrooms for 800 pupils, $1,654,000, 50% complete, Rittenberry & Son, architects;

Alice Landergin (elementary)—7 rooms and cafeteria, $204,850, 90% complete, J. Roy Smith, architect;

Summit (elementary)—2 rooms, $36,000, complete, Howard Ensign, architect;

Carver (colored) — 6 rooms, $92,000, complete, M. O. Carder, architect;

Senior high — vocational and lunch room, $231,600, 75% complete, Rittenberry and Son, architects.

Of this list the first four are new schools, the rest additions.

Plan Seven More Projects

School additions made possible by the voters' approval of a $900,000 bond issue last month will include:

Pleasant Valley (elementary)—4 rooms and cafeteria, $150,000, Walsh and Hazlewood, architects;

Humphrey Highland (elementary) — 8 rooms, $130,000, John Hannon, architect;

San Jacinto (elementary) — cafeteria, $140,000, Rittenberry & Son, architects;

Glenwood (elementary) — 4 rooms, $60,000, Howard Ensign, architect;

Sam Houston (junior high)—lunch room and band room, $160,000, J. Roy Smith, architect;

Lamar (elementary)—8 rooms, $130,000, R. E. Hucker, architect;

Nixson (junior high) — major alterations, $80,000, architect not selected.

A $50,000 fund has been set aside for the purchase of new school sites, bringing the grand total of both programs to $4,117,250.

Texas "Load-Zones" Farm, Ranch Roads

The Texas Highway Department is inaugurating a program of "load zoning" of farm-to-market and ranch-to-market roads throughout the state, in accordance with the provisions of Senate Bill No. 57, passed by the last session of the Texas legislature.

The recent session of the legislature raised the overall maximum gross weight limit to 58,420 pounds but made an exception by providing the State Highway Commission with the power and authority to fix maximum gross weights below this amount on farm and ranch-to-market roads where conditions justify.

It was announced at the Highway Department that the state now has an investment of approximately $136,000,000 in the farm-to-market roads of this state, built since the close of World War II, and the engineers of the Department estimate that of this total amount approximately $80,000,000 represents the investment in pavement and surfaces alone.

D. C. Greer, State Highway Engineer, said, "We have been endeavoring on our farm-to-market road programs since the close of the war, to secure the maximum mileage of such roads with the money available." He added, "In order to accomplish this objective, we have designed these farm-to-market roads on the principle of low-cost construction for nominal weights of loads, and the action of the recent session of the Texas Legislature is interpreted as an endorsement of this principle of low cost road construction and furnishes to the Department a means of protecting the investment of these roads."

The Department stated that the most urgent cases will likely be found in those areas of the state where poor sub-soil conditions exist, a fairly high average annual rainfall is encountered, and extremes in climatic conditions are the rule. Mr. Greer stated that with the approach of winter weather and the subsequent spring thaws and rains, it is imperative that this program be undertaken at this time in order that the investment in these roads may be preserved.

The Highway Department advised that as soon as official action shall be taken on any road, load limit signs will immediately be posted on such road, and it will be the duty of the state and local police to enforce these load limits if the plan of protection of these low cost roads is to succeed.

Lewis & Bowman Submit $2,994,600 Dam Bid

Lewis & Bowman, of Goldsboro, N. C., submitted the low bid of $2,994,600 for construction of the 725-foot Rocky Gorge dam and pumping plant planned on the Patuxent River, near Laurel, Md., by the Washington Suburban Sanitary Commission.

The bid was on the basis of an Ambursen design and was one of two types for which proposals were received.

The structure will consist of an Ambursen type reinforced concrete slab-and-buttress dam with earth embankment at each end. It will be 130 feet high.

Peerless Adds Facilities

Peerless Coal & Coke Co. of Vivian, W. Va., is adding facilities that will permit cleaning from one-quarter-inch to zero slack coal. The equipment consists of two Super Airflow tables, together with the necessary conveying and dust-collecting units to handle 100 tons an hour.

Structural steel has been erected and the plant should be in operation by February 1, according to General Manager E. C. Luther, Jr. Roberts & Schaefer Co. of Chicago is furnishing and installing the equipment.

Heyden Purchases Site

Heyden Chemical Corp. of New York has purchased sixty acres of land adjacent to the Houston Ship Channel, Houston, Tex., to be used as the site for a plant to produce methanol and other products.

Sporn Power Station Being Enlarged

Ohio Power Co. has a three-year construction program under way involving expenditure of slightly over $119,137,000, of which $27,207,000 is being spent this year, with $49,579,000 estimated for 1952 and $42,351,000 for 1953.

According to Harold A. Smith, of the American Gas and Electric Service Corp., New York, generating unit Number 4 at the Philip Sporn plant near Parkersburg, W. Va., accounts for $11,446,000 of the expenditure. This will be of 150,000 kilowatts capacity.

The new Muskingum plant, he says, harboring two 200,000 kilowatts, will be erected on the Muskingum River at Beverly, Ohio, and accounts for $43,500,000.

First leg of the 330,000-volt transmission line to be erected between the two plants will account for an estimated $2,507,000.

An extension of this transmission line will run from Muskingum River to Lima, Ohio, and is estimated to cost $9,734,000.

At Lima, a 330,000-volt substation is to be built at a cost of $2,210,000.

Expansion and extension of substation, transmission, distribution and other facilities on the Ohio Power system will involve an outlay of $49,740,000.

Executive Named by Soil Pipe Institute

The Cast Iron Soil Pipe Institute, with executive offices in the Heurich Building, Washington, D. C., has announced appointment of Homer E. Robertson as executive vice president.

Mr. Robertson, prior to his appointment, was vice president in charge of sales of the Somerville Iron Works, Newcastle, Pa., manufacturers of cast iron pipe and fittings.

NPA Official Cites Chemicals Industry Expansion

Applications for certificates of necessity for expansion in the industry already total in value more than two and a half billion dollars, and unofficial estimates have placed the expansion program at four billion dollars, according to Kenneth H. Klipstein, an assistant in the National Production Authority.

"Some of the individual expansion programs are tremendous in size, such as a 50 per cent increase in chlorine and caustic soda production and 610,000 tons of new nitrogen facilites," he stated. "As other industries expand, their requirements for chemicals go up and must be supported."

He cited as one example the petroleum industry, which in the South broadened in importance in recent years. Substantially greater quantities of sulfuric acid will be needed for that industry to meet future production of aviation gasoline, and as aluminum is expanded that industry's requirements for acid will go up proportionately, he pointed out.

"The needs of agriculture for more fertilizer will call for greater and greater production of raw materials, and the same is true of pesticides," the speaker asserted. "The present output of chlorinated pesticides already requires approximately 10 per cent of the total supply of benzene and 8 per cent of the total supply of chlorine."

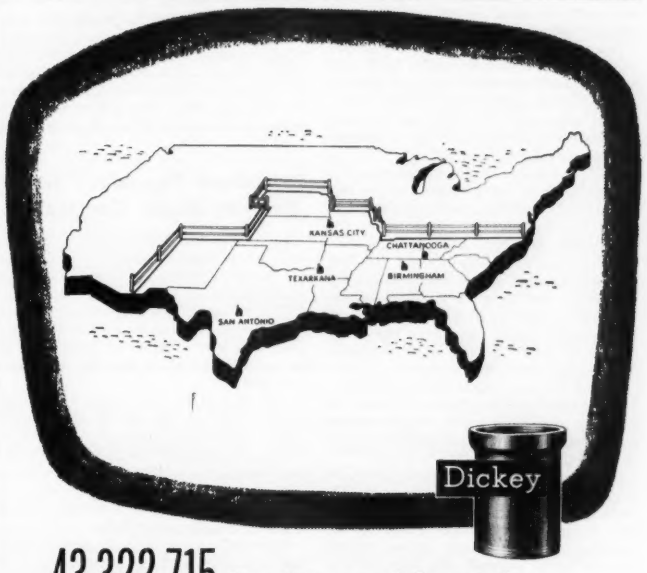
Thus far, NPA has not found it necessary to place many chemicals under allocation, Mr. Klipstein said, because of the expansion the industry has undergone, the fact that the bulk of the output generally supports miltiary needs indirectly, and because the industry has been "most cooperative" in instituting informal allocations among its customers.

The NPA official recalled that stocks of sulfur at mines had declined from 4,300,000 tons in 1942 to 2,388,000 last year, despite an increase in production of from 3,460,686 tons in 1942 to 5,192,184 in 1950.

"Stocks at the end of 1950 approximated only a five-months supply which simply could not be reduced any lower," he said. "In fact, they were already too low to permit shipments to be made efficently. Even in pre-Korean days the demand for sulfur was greater than production and after Korea there was no choice but to take positive action."

On June 1, 1951 NPA issued Order M—69 limiting permissible use of sulfur to 100 per cent of 1950.

"Our data were not complete," he said, "and we did not dare reduce the percentage below 100 per cent for fear of the adverse effect it might have on the nation's economy if the cutback was too drastic."



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DPA Gives "Green Light" to Newsprint Expansion

Plans in the Southeast to expand the production of newsprint to meet the present nationwide shortage among newspapers and other publications through certificates of necessity permitting rapid tax amortization have been given the "green light" by the Defense Production Administration with certain limitations, Merrill C. Lofton, regional director of the U. S. Department of Commerce announced.

The limitations were on expansion of the nation's newsprint production capacity and an announcement from DPA that priorities in construction, or expansion in the construction of new facilities, must wait until the more urgent defense projects are out of the way, it was stated.

The production capacity expansion was fixed at 494,000 tons annually. DPA said it recognized the importance of providing sufficient newsprint so that newspapers will be able "to continue to carry out their important function of keeping the people fully informed."

Applications are now pending from five newsprint firms for issuance of the certificates of necessity, and DPA's Office of Resources Expansion, which issues the certificates, will now have to determine whether they should be granted, Mr. Lofton said. In keeping with past policy, DPA did not list the names of the firms whose applications are on file, but it is known that considerable interest has been shown in the Southeast in development of the industry in this area.

Action on the applications for newsprint expansion facilities will have to wait for the disposal of priority cases, since newsprint is not on the priority list, it was explained.

In making the announcement, DPA also supplied some figures compiled by the pulp, paper and paperboard division of the National Production Authority regarding the present and future outlook for newsprint supplies. On January 1 of this year, it was stated, total U. S. newsprint production was 1,096,000 short tons, and next year the supply, including imports, will fall about 344,000 tons short of meeting demand. Because of the growing demand, this deficit will continue to increase to about 494,000 tons in 1953 unless more production facilities are provided, it was stated.

Estimated 1951 world consumption of newsprint was placed at about 10 million tons, and the world deficit in 1952 at about 600,000 tons, a large part of which is centered in western Europe, where there is little chance of any substantial increase in production.

"In recent years there has been considerable over-cutting of forests in Scandinavian countries, and there is little prospect for increased production in those areas," the summary said. "There is also a trend in those countries as elsewhere in the world for increased emphasis on the production of higher-grade papers in which there is a greater margin of profit."

No major expansion in newsprint production can be expected in the Southern hemisphere in the next decade, it was added, since most of the other forest reserves which can supply lumber for newsprint are located behind the Iron Curtain; the North American continent is the only alternative as a potential producer.

In recent years, production of Canadian newsprint has been increasing since it has been cheaper for publishers to buy newsprint in Canada than domestically, it was also stated, but there is no indication there will be any major expansion of Canadian facilities in the next few years. As European and South American countries build up their dollar balances, exports of Canadian newsprint to those areas can be expected to increase.

The NPA officials also noted a growing number of weekly newspapers in the United States which they said are competing for available newsprint, including religious, labor and fraternal publications which, it was stated, consume about three per cent of the total United States newsprint supply. This demand, it was said, could easily double in the next 10 years.

Oklahoma Shoulders Good, Drivers Make Complaints

Did you ever hear of a highway so good that it brought complaints?

The Oklahoma state highway commission has one.

It is a newly built section on US Highway 60 between Sapulpa and Tulsa. It was built on a new location to eliminate a lot of curves that made the old route hazardous.

The 24-foot concrete slab has 10-foot bituminous shoulders built on the same level as the driving lanes.

Motorists took to driving on the shoulders just as though the road was a 4-lane and passed vehicles on the wrong side, and blinded themselves to speed limit signs. Uproarious complaints piled up.

Highway patrol troopers moved in and began making arrests.

Drivers told them that they mistook the shoulders for a part of what they thought was a 4-lane road.

The troopers and local authorities rushed to the commission asking for signs designating the shoulders and advising drivers to avoid using them except for emergencies.

The commission complied.

Consolidated Engineering

(Continued from page 39)

collectively. However, other contracts were equally important in their respective fields.

Three citations were awarded the Baltimore construction firm during this time. The Army-Navy "E" flew for outstanding performance at the Patuxent Naval Air Station built at Cedar Point, Md. The Coast Guard bestowed a similar honor for the recruit training center at its Curtis Bay depot. Promotion of war bond sales resulted in a certificate from the Treasury Department.

Modern construction companies are highly organized. Their reputations are based on their records of buildings and structures completed. These, however, would not be possible without experienced and trained administrators and personnel. Staff members must be specialists in their lines. The plan of procedure is all-important. Consolidated's method is a project manager who is immediately accountable for completion of the structure, with final responsibility resting with the company itself.

A thousand years of experience might be the description of the key headquarters and field personnel of the Consolidated organization. Experience of the company's officers approximates 212 years; of its project managers, 133 years; of its estimators, 100 years; of its superintendents, 337 years. Masonry department and yard supervisory workers add another 154 years to the figure.

Officials of the company, in addition to Messrs. Stalfort, Elderkin, Cox, Berger and Ward, are Harry B. Ward, secretary and assistant treasurer, and Richard H. Edwards, assistant secretary. Project managers include Herman W. Berger, Sr., Edmund B. Ward, James I. Crout, H. Alfred Stalfort, E. A. McParland, Herman W. Berger, Jr., Charles A. Driver, Robert R. Rote and Clarence E. Elderkin, Jr. Twenty-four or more superintendents direct the large field organization. William B. Spencer is chief engineer.

Accomplishments, coupled with experience and a policy of strict honesty not only in company transactions but extended down through its employes, with reliability and responsibility insisted upon, are important factors in a successful construction venture, according to President Stalfort. (S. A. L.)

South's Contracts High in Eleven Months

(Continued from page 21)

sellers of labor service or any combination of labor, materials and services under contract for building, highway, heavy, railroad and miscellaneous construction.

Generally, the restriction, which is known as Ceiling Price Regulation 93, is aimed at allowing establishment of prices on the basis of current costs of labor, materials and equipment, plus nine-tenths of the mark-up for profit in the bases period on similar jobs.

The base period is July 1, 1949 through June 24, 1950. Base period mark-up is defined as the highest base period percentage mark-up for profit, overhead or for profit and overhead over a cost base for any type of job or installation which you performed or upon which you made a bid. Base period price is the highest price in effect for each class of buyer during the base period for each type of construction service.

The Office of Price Stabilization says the contractor "may sell or continue to sell a construction service covered by this regulation at the ceiling price which

you established and reported under CPR 34.

"If, however, you choose to use a percentage mark-up established under CPR 34, you may not apply this mark-up to current costs. It must be applied to costs prevailing during the CPR 34 base period, December 19, 1950, through January 25, 1951, unless otherwise provided in CPR 34."

This, the price restriction agency says, "does not affect your right at any time later to put into effect the ceiling prices as computed or recomputed under this regulation, or your ceiling mark-up over an appropriate cost base under this regulation."

(Continued on page 57)

INDUSTRIAL

	November, 1951 Contracts Awarded	Contracts to be Awarded	Contracts Awarded First Eleven Months 1951
Ala.	$ 6,848,000	$ 21,377,000	$ 141,418,000
Ark.	.....	10,100,000	107,774,000
D. C.	.....	.....	.....
Fla.	1,193,000	10,910,000	116,341,000
Ga.	480,000	810,000	47,090,000
Ky.	300,000	.....	441,145,000
La.	23,705,000	110,590,000	199,094,000
Md.	2,293,000	7,042,000	116,144,000
Miss.	1,217,000	11,155,000	62,192,000
Mo.	1,385,000	550,000	36,466,000
N. C.	350,000	4,250,000	18,566,000
Okla.	900,000	4,945,000	24,424,000
S. C.	100,000	400,000	377,557,000
Tenn.	20,000	43,447,000	39,939,000
Tex.	7,583,000	92,782,000	477,482,000
Va.	125,000	41,278,000	28,616,000
W. Va.	.....	69,698,000	37,545,000
Total	$46,499,000	$429,334,000	$2,271,793,000

PUBLIC ENGINEERING

(Dams, Drainage, Waterworks, Sewers, etc.)

	November, 1951 Contracts Awarded	Contracts to be Awarded	Contracts Awarded First Eleven Months 1951
Ala.	$ 198,000	$ 38,407,000	$ 34,500,000
Ark.	.....	811,000	9,141,000
D. C.	63,000	1,380,000	2,987,000
Fla.	5,452,000	24,106,000	102,768,000
Ga.	3,352,000	21,035,000	36,442,000
Ky.	65,000	158,698,000	5,449,000
La.	1,447,000	12,774,000	48,557,000
Md.	603,000	4,240,000	18,007,000
Miss.	194,000	2,903,000	35,133,000
Mo.	5,214,000	4,815,000	23,589,000
N. C.	10,368,000	33,565,000	132,376,000
Okla.	318,000	7,434,000	14,043,000
S. C.	1,667,000	1,725,000	18,214,000
Tenn.	1,506,000	9,380,000	41,791,000
Tex.	5,883,000	89,017,000	170,463,000
Va.	5,857,000	8,617,000	57,036,000
W. Va.	.....	1,100,000	245,000
Total	$42,187,000	$420,007,000	$750,741,000

PRIVATE BUILDING

(Assembly, Commercial, Residential, Office)

	November, 1951 Contracts Awarded	Contracts to be Awarded	Contracts Awarded First Eleven Months 1951
Ala.	$ 2,822,000	$ 3,340,000	$ 54,309,000
Ark.	.....	600,000	10,116,000
D. C.	.....	135,000	3,798,000
Fla.	9,688,000	7,903,000	146,517,000
Ga.	43,000	4,125,000	61,965,000
Ky.	2,000,000	1,750,000	14,936,000
La.	1,804,000	4,685,000	66,667,000
Md.	5,280,000	15,900,000	106,404,000
Miss.	366,000	850,000	13,779,000
Mo.	615,000	1,725,000	67,654,000
N. C.	12,807,000	18,821,000	51,225,000
Okla.	130,000	3,280,000	630,000
S. C.	4,394,000	50,000	45,942,000
Tenn.	4,057,000	500,000	75,016,000
Tex.	20,052,000	34,035,000	172,177,000
Va.	153,000	5,260,000	63,357,000
W. Va.	.....	.....	465,000
Total	$64,211,000	$102,959,000	$954,957,000

PUBLIC BUILDING

(City, County, State, Federal; Schools)

	November, 1951 Contracts Awarded	Contracts to be Awarded	Contracts Awarded First Eleven Months 1951
Ala.	$ 2,280,000	$ 3,015,000	$ 31,833,000
Ark.	547,000	730,000	11,391,000
D. C.	251,000	945,000	26,879,000
Fla.	1,495,000	4,389,000	46,833,000
Ga.	2,993,000	1,390,000	41,874,000
Ky.	.....	355,000	11,951,000
La.	1,020,000	23,232,000	43,787,000
Md.	2,864,000	11,212,000	97,649,000
Miss.	1,525,000	1,820,000	17,757,000
Mo.	2,723,000	1,810,000	16,885,000
N. C.	2,965,000	3,613,000	86,995,000
Okla.	.....	425,000	7,325,000
S. C.	1,442,000	1,185,000	26,362,000
Tenn.	505,000	1,060,000	35,877,000
Tex.	7,089,000	23,897,000	131,999,000
Va.	5,170,000	4,635,000	107,619,000
W. Va.	.....	300,000	6,385,000
Total	$32,869,000	$84,013,000	$748,501,000

ROADS, STREETS, BRIDGES

	November, 1951 Contracts Awarded	Contracts to be Awarded	Contracts Awarded First Eleven Months 1951
Ala.	$ 1,195,000	$ 10,176,000	$ 20,295,000
Ark.	.....	7,518,000	10,229,000
D. C.	.....	2,370,000	874,000
Fla.	1,397,000	12,470,000	76,318,000
Ga.	3,093,000	12,446,000	23,446,000
Ky.	4,149,000	9,353,000	27,099,000
La.	4,661,000	12,760,000	45,239,000
Md.	3,651,000	14,651,000	38,290,000
Miss.	384,000	8,169,000	22,806,000
Mo.	1,460,000	15,340,000	24,667,000
N. C.	2,354,000	900,000	50,611,000
Okla.	3,885,000	119,380,000	32,047,000
S. C.	2,187,000	7,729,000	23,158,000
Tenn.	.....	11,262,000	17,644,000
Tex.	5,445,000	34,330,000	111,067,000
Va.	293,000	9,418,000	34,534,000
W. Va.	1,196,000	5,355,000	8,486,000
Total	$35,350,000	$284,627,000	$567,310,000

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1952 Finish Date Set for Oklahoma Turnpike

If present schedules are maintained Oklahoma's $31,000,000 Turner turnpike linking the state's two largest cities, Oklahoma City and Tulsa, will be completed by the first of December of next year.

The turnpike engineers, DeLeuw, Cather and Co. of Chicago, have made this report to the turnpike authority.

Prospective completion date is about two months later than the date originally set in the authority's bond issue prospectus issued in November of 1950.

The DeLeuw-Cather report also forecast:

Completion of all grading and drainage contract work by April 15, 1952 or approximately five months later than the bond prospectus said.

Completion of all structures, including bridges, not later than December 1, 1952, or approximately five months later than the date set forth in the prospectus.

Completion of all paving contracts and related work, including utilities, by the same date or approximately five months later than the bond prospectus date.

The report further stated that the project would be completed within the amount of the bond issue.

As of August 4, the engineers reported, contract work awarded to date reached $5,180,000.

This amount was spent for 40.911 miles of grading and drainage at a cost of $4,341,000, two bridge structures costing $115,000, guard rail fencing, $489,000 and alterations and relocations for 97 utility crossings, approximately $237,000.

Since the issuance of the report the authority has awarded contracts for 27.463 miles of additional grading and drainage and five bridges at a cost of $3,757,596.

The 68.911 miles of roadbed now in construction or under contract represents approximately 79 percent of the 88 miles the turnpike travels.

On the assumption that the trend in unit prices will continue upward, the engineers figure the actual construction cost of the toll road will be $24,714.50.

Their report estimated right-of-way and property damage costs at $800,000, legal, administration, overhead and miscellaneous costs at $500,000; bond interest during construction, $2,136,000; engineering and contingencies, $2,409,250, maintenance, police, communications and office equipment, $440,000.

Mid-Valley to Build Six Booster Stations

Mid-Valley Pipeline Co. has announced plans to step up capacity on its 1,000-mile crude oil line from east Texas to Ohio to meet increasing defense and civilian requirements for petroleum products in Ohio and the adjacent area.

Construction of six new booster pump stations, together with additional tankage, will increase from 155,000 barrels to 235,000 barrels per day the capacity of the 565-mile section of 22-inch line between Mayersville, Miss., and Hebron, Ky., with proportional increases in the sections from Longview to Mayersville and from Hebron to Lima, O.

The new booster stations will be located at Stevenson, La.; Minter City, Miss.; Hornsby, Tenn.; Elkton and Simpsonville, Ky., and at Pyrmont, Ohio.

One additional pump unit, either diesel or electric motor, is also to be installed in each one of the existing main trunk line stations. A micro-wave communications facility will be installed at each new booster station.

"Increased refinery demands for Ohio and adjacent areas have made it necessary to include this new construction before the line is fully completed," E. F. Morrill, president of Mid-Valley said.

Cost of the new installations will be from eight to nine million dollars. Completion is expected early in 1952, providing satisfactory delivery can be obtained on materials on order.

Expansion of the capacity of the Mid-Valley line, a common carrier, is part of an over-all program to make full use of available new supplies of crude oil from west Texas.

The Mid-Valley line will connect with the projected "big inch" crude line from west Texas through a 20-inch spur from Wortham to Longview in east Texas, the southern terminal of the Mid-Valley line. Sun Oil Co. and the Standard Oil Co. (Ohio), joint owners of Mid-Valley, are also participants with Gulf Oil Corp., Cities Service, and Pure Oil Co. in a new pipeline which forms a link between west Texas oil fields and pipeline and port facilities in the eastern part of the state. It is expected that construction of this line will start early in 1952.

Lone Star Cement Plant Advances at Maryneal

The new plant of the Lone Star Cement Corp. at Maryneal, 20 miles south of Sweetwater, in Nolan County, Texas, is being completed.

To be one of the most modern in the world, the new plant will have an annual productive capacity of between five and six million sacks of Lone Star cement. It is the third Lone Star plant in the state of Texas. Others are located at Dallas and Houston.

General Contractors, who are the Walsh Construction Co. and Gifford-Hill Co., Inc., of Dallas, have several hundred men on the job. About 100 additional men are employed by Macdonald Engineering Co., which is constructing the concrete silos.

Other subcontractors such as the Wallace Plumbing Co. and Fischbach & Moore, electrical contractors, both of Dallas, are employing from 50 to 100 men, so that the total force now engaged is at the present time around 600 men.

Three groups of silo structures are practically completed. These structures have a total height of about 125 feet and present an imposing sight in the flat country where the plant is located.

Much of the heavy machinery is already on the ground. Two rotary kilns, each consisting of a cylinder 10 feet in diameter by 340 feet long, are ready for mounting on the concrete foundation piers, and several of the big grinding mills are also on hand ready for installation.

Texas Electric Power Co. is constructing a high-tension power line from their substation at Abilene to provide the power required for operating the plant which will be in the neighborhood of 6,000 horsepower. All of the electrical connections to the various departments will be through an underground conduit system which is now being installed.

Practically all of the construction material needed for the buildings and machinery installation is on hand, and machinery and equipment have been on order for many months and are now being delivered at a rapid rate. No serious delays in the receipt of any necessary parts are anticipated.

Since the construction of the plant started, there has been considerable activity in building houses, both for residents and commercial purposes, in Maryneal and on property adjoining the plant, all of which has added to the general activity in this part of the state.

$4,000,000 Equipment Ordered for Texas Steel Mill

Lone Star Steel Co. of Dallas has ordered more than $4,000,000 of General Electric equipment for a giant new steel mill now under construction at the company's East Texas works.

To be equipped for full-scale steelmaking, the new plant will manufacture pipe for the petroleum industry. Cost of the project has been estimated at $75,000,000.

General Electric will supply complete main drive and edger drive motors and controls and ventilating equipment for a new 45 by 80-inch two-high reversing slabbing and plating mill. A 15,000-kilowatt steam turbine generator set and electrical distribution equipment will be furnished for plant-wide power supply.

The 7,000-horsepower reversing main drive will consist of two General Electric 3,500-horsepower, d-c, amplidyne-controlled motors, while a 2,500-horsepower, d-c motor will drive the vertical edger. An 8,000-kilowatt flywheel motor-generator set will supply power to the motors.

General Electric also will furnish a wound rotor motor driving the m-g set, a complete complement of exciter sets, mill control equipment including protective air circuit breakers, and downdraft recirculating ventilating equipment for the main drive.

Distribution equipment includes 13,800-volt metal clad switchgear, two 500-kilowatt sealed ignitron rectifiers, seven unit substations and a master substation.

The mill is being built by the United Engineering & Foundry Co. of Pittsburgh. It is expected to be in operation at Lone Star, Tex., by late 1952.

Plans Delayed on Wharf Proposed at Galveston

Plans and specifications have been delayed for the wharf to be constructed adjacent to Dock No. 9, Galveston, Texas, according to Gen. W. F. Heavey, Port Director there. The project may be ready by the middle of March.

White Kerosene Torches For Many Heating Uses

White torches are widely used by contractors, highway departments, railroads, general industry. They are heavy duty units for dependable, satisfactory heating and melting.

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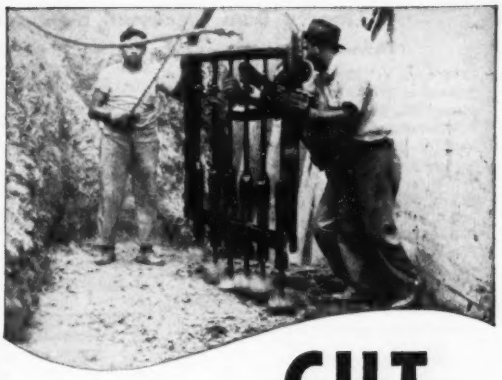

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Liberty Dam Discussed by Engineer

(Continued from page 35)

square cm. per gram, or higher. Portland cement is generally around 1600 to 2000 square cm. per gram.

The composition and fineness of fly ash have an important bearing on the characteristics of concrete made with it. It is essential, therefore, that each particular fly ash be investigated thoroughly before being used. Accordingly, we have specified that the fly ash to be used in the concrete for the Liberty Dam shall meet the following principal requirements:

Silicon dioxide ($Si_1 O_2$) min. per cent.	40.0
Aluminum oxide ($A1_2 O_3$) min. per cent.	15.0
Carbon max. per cent.	10.0
Moisture content max. per cent.	3.0
Fineness—sq.cm. per gm. min.	2500

Besides saving cement at a time when there might be a scarcity, and the reduction in cost of the structure due to lower cost of pozzolan in comparison with cement, there are other beneficial effects of the use of fly ash. These are generally attributed to fineness and the high percentage of finely divided silica. It is considered that the very fine, nearly spherical particles of which many fly ashes are composed contribute to increased workability and cohesiveness of the fresh concrete and to reduced segregation and bleeding. Also, as the concrete hardens, the lime released during cement hydration combines with the silica in the fly ash to produce cementitious compounds. This action tends to increase strength at later ages, prevent the release of fine lime, referred to as efflorescence, and reduce permeability by closing capillary pores.

The use of fly ash in Hungry Horse Dam is the most publicized example of its use in mass concrete. The results have been published in a report by the Branch of Design and Construction of the Bureau of Reclamation titled "Progress Report—Concrete Investigation for Hungry Horse Dam." Should the results for Liberty Dam prove doubtful we will be able to eliminate this item in its entirety.

There is one final statement I would like to bring to your attention regarding the concrete to be used in the construction of the Liberty Dam. I refer to the actual mix and density of the concrete. We will not know the actual mix to be used until trial batches have been prepared and approved. We could not specify the mix to be used as we did not know if the contractor would elect to use a natural fine and coarse aggregate or a manufactured fine and coarse aggregate or a combination of both. However, we did specify the maximum slump of the different classes of concrete, the minimum specific gravity of the aggregate, the cement content, the volume of air to be entrained, the grading of the fine and coarse aggregates, and the compressive strength.

150-Pound Concrete Basis

All design computations have been based on a concrete weight of 150 pounds per cubic foot and it has been specified that the specific gravity of the material used shall be such as to produce a concrete of the weight specified.

The weight of concrete is important in structures such as gravity dams, which rely on their weight for stability. High unit weight is obtained where the aggregate has high specific gravity and maximum amounts of coarse aggregate, well graded to the largest practicable size, are used, due consideration being given to the effect of entrained air. Tests of unit weight of hardened concrete, contrary to general belief, indicate that the unit weight increases from two to three per cent more than the unit weight of fresh concrete.

A gallery for grouting and inspection has been provided for and will extend the entire length of the dam and will step down to follow the approximate contour of the ground. Grout pipes of 1½-inch in diameter will project from the gallery and will enable the contractor to grout at his convenience.

We have also specified 3-inch drainage holes be drilled from the floor level of the gallery at approximately 25-foot spacing and to project through the concrete into the rock foundation for a distance of approximately 20 feet.

Intake at Tunnel Portal

The gate house intake tower will be located near the present diversion dam that was constructed by S. R. Rosoff, Ltd., and approximately 1¼ miles upstream from the Liberty Dam. This tower will be circular, 35 feet in diameter and approximately 170 feet high, and will house eight sluice gates 3 feet by 5 feet in section. Two of these will be designed for an 18.5-foot head, four for a 63.5-foot head, and two for 108.5-foot head, and will enable us to draw water from the lake at different elevations. A 270-foot aluminum suspension bridge from the tower to the shore is proposed for a walkway.

The clearing for the reservoir area includes about 3500 acres of land and is being done by the forces of the Bureau of Water Supply. To date we have sawed about 2,000,000 board feet of lumber to be used by various departments in the City Government. Trees are cut as close to the ground line as is practicable and vary in height from 6 to 10 inches, depending upon the size of the tree cut. Grubbing is not being done as it was decided that the benefits from this operation would not warrant the expense involved.

Trees too small for lumber are prepared and sold as pulp wood to a paper manufacturer about 38 miles from the site of operations. The pulp wood sold averages about 80 cords weekly, for which the city receives approximately $1200.

There are four bridges proposed over the reservoir, ranging in length from 600

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to 1800 feet, the latter being the Liberty Road Bridge over the Patapsco. These bridges are being designed by the J. E. Greiner Co. and it is proposed that construction will start next Spring.

South's Contracts High

(Continued from page 53)

Construction throughout the country declined seasonably in November, according to the departments of commerce and labor, which estimated that put in place work amounted to $2,500,000,000. This represents a drop of seven per cent.

While all major types of construction were included in the decrease, the agencies said, "public construction dropped off relatively more than private, mainly because of the regular fall decline in highway work."

Less than seasonal declines occurred in residential building, privately-owned public utilities and important segments of public work, particularly in military and naval activity. Private industrial building and commercial building were both off more than seasonally, reflecting the materials shortage.

Eleven month figures for the entire country amounted to $27,700,000,000, this a gain of eight per cent when compared with the same period of last year.

Private expenditures January through November this year amounted to $19,-200,000,000, slightly above expenditures in the eleven-month period of 1950.

Outlays for new dwelling units and for social and recreational building were down substantially, but nearly all other types of private construction showed gains, with industrial plant expenditures almost doubled.

Public expenditures so far, at $8,500,-000,000 are 29 per cent ahead. Most significant increases were in military and naval fields, industrial building and schools. Highway construction was reported slightly down.

Patuxent River Bridge

(Continued from page 19)

Oscar Mulford, the engineer. Resident engineer for the Maryland State Roads Commission was L. E. McCarl.

Subcontractors on the project included:

Tidewater Pier & Dredging Co., dredging;

Waldorf Concrete Co., furnishing concrete;

Rodney King, blasting for embankment acceleration;

Jack Stone Co., Inc., electrical work;

Singelis Painting Co., painting;

Mueller Contracting Co., seeding and mulching;

The brick administration building was erected by William T. Lyons Co., Inc., of Baltimore, on a low bid of $48,006.

J. E. Greiner Co., consulting engineers of Baltimore, designed the draw span.

(S. A. L.)

Port Aide Named

Capt. Thomas L. Lewis, USN (retired), former chief of staff at Eighth Naval District Headquarters in New Orleans, has been appointed assistant to the general manager of the Board of Commissioners of the Port of New Orleans.

Virginia Projects

(Continued from page 45)

WARWICK COUNTY—Board of Education let contract at $399,777 to Mottley Construction Co., Farmville, for Deer Park Elementary School.

WINCHESTER—H. J. Heinz Co. has an expansion program in progress; will increase cider and vinegar storage capacity by 1,032,000 gallons; $125,000.

WYTHEVILLE—City let contract at $164,-770 to J. M. Turner & Co., Roanoke, for sewage treatment plant.

YORK COUNTY—Board of Education let contract at $126,000 to Edward Banks, Williamsburg, for Magruder Elementary School.

WEST VIRGINIA

Bureau of Public Roads allocated $5,295,409 for highways.

Among coal mining projects authorized by Defense Solid Fuels Administration are: Valley Camp Coal, Elm Grove, Triandelphia and Ward, $1,160,866; Boone County Coal, Sharples, $210,591; New River & Pocahontas, Berwind, $142,970; Buckeye Coal and Coke, Freeman, $140,000; Freeport Coal, Morgantown, $2,408,918; Traux-Traer Coal, Kayford and Ceredo, $1,089,919; Peerless Coal and Coke, Vivian, $295,782; U. S. Steel, Gary, Wilcoe, Ream and Munson, $509,500; Lamar Colliery, Herndon, $7,360; Consolidation Coal, Enterprise, $2,500,000; Carbon Fuel, Carbon, $25,700; Windsor Power House Coal, Windsor Heights, $15,000; Eastern Gas & Fuel, Keystone, $1,500,000; Red Jacket Coal, Red Jacket, $756,173; Bethlehem Collieries, Century and Barrackville, $1,225,000; Jamison Coal, Farmington, $3,500,000; Christopher Fuel, Morgantown, $130,000; Peters Creek Coal, Summerville, $80,000; and Preston County Coke, $2,600.

ALBRIGHT — Monongahela Power Company, announces plans for third generating unit of power plant, $17,000,000.

BLUEFIELD - PRINCETON — Mercer County plans landing strip, Municipal Airport, $200,000.

FOLLANSBEE — Follansbee Steel Corp. granted certificate of necessity for approximately $33,000,000 covering a proposed expansion program; includes hot strip mill; also melt shop with new buildings, docks, tracks, yards, shops, sub-stations and various auxiliary equipment.

HUNTINGTON—City plans paving runway and apron, Tri-State Airport, $200,000.

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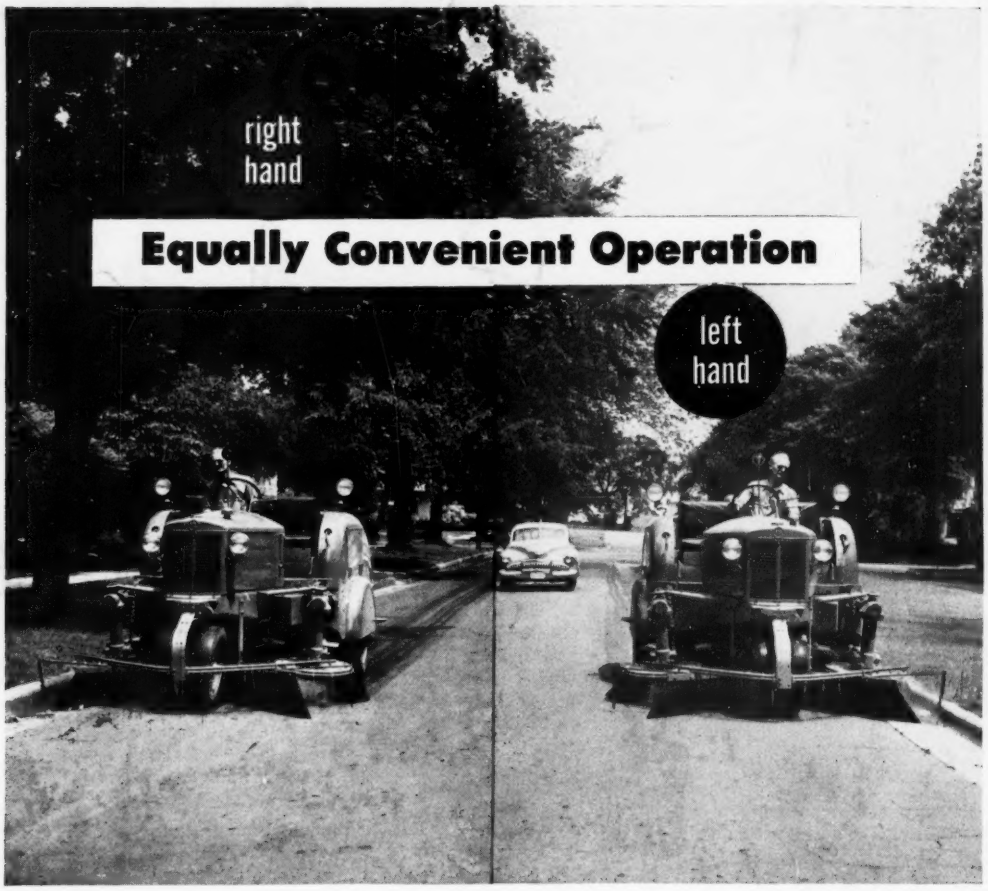

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